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A Regional Prototype for Obtaining and Evaluating Disease-Specific, Community-Level Data.

The TRICARE Lead Agent Office,

Department of Defense, Health Services Region 6

A Graduate Management Project Submitted to the Faculty of the

U.S. Army-Baylor University for Successful Completion of

Requirements for the Master of Healthcare Administration Degree

by

Judith M. Hawkins

CPT, USA, AN

U.S. Army-Baylor University

Graduate Program in Healthcare Administration

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TRICARE Southwest, DoD Health Service Region 6
7800 IH-10 West, Suite 400
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14. ABSTRACT
This GMP developed a regional method that the TRICARE Southwest staff can use to obtain and evaluate community-level disease-specific data on eligible beneficiaries using TRICARE in both military and civilian settings. The first step taken to accomplish this GMP included dividing the region into manageable data collection areas or communities, geographically determined by eligible beneficairy concentration. The second identified information systems through which one can gather community-level and disease-specific data. Through DEERS, one can obtain demographic data for all Region 6 communities. Disease-specific MTF and CHAMPUS data were collected through CEIS in three sample communities, using the ICD-9 codes for one sample disease/illness. The third step determined potential community and regional benefits to obtaining, evaluating and proliferating this data.This GMP resulted in the identification of recommendations for the three sample communities, to include targeting the frequently presenting patients for case management efforts, improving coding accuracy, encouraging comprehensive, planned care rather than emergency driven care and assessing CHAMPUS disease-specific costs in the community. Thisf GMP also identified a method to proliferate community-level, disease-specific issues, variations and best practices region-wide.

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Abstract

This Graduate Management Project (GMP) developed a regional method the TRICARE Southwest staff can use to obtain and evaluate community-level disease-specific data on eligible beneficiaries using TRICARE in both military and civilian settings. The first step divided the region into manageable data collection areas or communities, geographically determined by eligible beneficiary population concentration. The second identified information systems through which one can gather community-level and disease-specific data. Through DEERS, one can obtain demographic data for all Region 6 communities. Disease-specific MTF and CHAMPUS data were collected through CEIS in three sample communities, using the ICD-9 codes for one sample disease/illness. The third step determined potential community and regional benefits to obtaining, evaluating and proliferating this data. This GMP resulted in the identification of recommendations for the three sample communities, to include targeting the frequently presenting patients for case management efforts, improving coding accuracy, encouraging comprehensive and planned care rather than emergency driven care and assessing CHAMPUS disease-specific costs in the community. This GMP also identified one method Region 6 can use to proliferate community-level disease-specific patterns and best practices throughout the region.

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Introduction

Conditions Which Prompted the Study

Colonel Clifford M. Loper, Executive Director TRICARE Region 6 was recently asked, "What is the health of your region?" by a member of the TRICARE Management Activity. In an attempt to at least partially answer that question, the TRICARE Southwest Lead Agent Office seeks to develop a regional method the staff can use to obtain and evaluate disease-specific community-level data. Additionally, the TRICARE Southwest Lead Agent Office seeks to develop a method to proliferate disease-specific patterns and best practices throughout the region.

TRICARE is the tri-Service managed care program for active duty and retired military personnel and their families. Historically, the focus of peacetime military health care delivery has been at the Medical Treatment Facilities (MTF) and in the MTF catchment areas. Catchment areas were geographically determined to include eligible beneficiaries living within a designated number of miles surrounding the MTF. Data collection systems and executive information systems focused on MTF data and Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) data within these catchment areas (J. Bowman, CEIS Regional Trainer, personal communication, January 24, 2000). Little data was available to assist executive decision

makers in making decisions about eligible beneficiaries and TRICARE users outside the MTF or catchment areas.

With the advent of the TRICARE program in 1994, the focus changed to reflect all eligible beneficiaries, regardless of whether they received care at the MTF or lived within a specified catchment area. Now each TRICARE region oversees the health care delivered by military and civilian providers to the eligible beneficiaries in their specified area. Each region includes areas that have an MTF and areas that do not. Each area may have a combination of TRICARE options available; the table below includes the three main options:

Table 1

Three Main TRICARE options:

TRICARE Plan	TRICARE Prime	TRICARE Extra	TRICARE Standard
Civilian Counterpart	Health maintenance organization (HMO)	Preferred provider organization (PPO)	Fee-for-service (FFS)
Enrolled plan?	Enrolled in MTF or Network	Not enrolled	Not enrolled

It is important to note that not all eligible beneficiaries utilize the TRICARE system because they may have other health insurance. Region 6 seeks to obtain disease-specific outpatient information about those that use TRICARE in the region.

TRICARE Southwest, or Region 6, focuses on the delivery of health care to eligible beneficiaries in a four state area:

Texas, Oklahoma, Louisiana, and Arkansas. According to the TRICARE Region 6 Intranet site, TRICARE Southwest has three overarching goals: (a) optimize the health status of the regional population; (b) optimize member-focused services for the regional population; and (c) optimize fiscal performance in the region.

One of the ways to meet these goals is to use a population health approach that identifies affected groups and provides information on those groups in order to establish patterns and variances in practice. Regional variation and patterns can then be evaluated with an eye toward communicating these patterns and improving the health of the population.

Region 6 sought to develop a regional method to obtain and evaluate outpatient disease-specific patient and community data. Although any chronic illness with an assigned International Classification of Diseases (ICD-9) code could have been used to develop this prototype, a chronic illness with key characteristics such as high cost acute events, high variation in treatment, high disease prevalence and potential impact on quality of life was sought (Reeder, 1999). With these factors in mind, migraine was chosen as the disease used to develop this prototype.

Although migraine headaches may affect a large segment of the national population, potentially 20 percent, no objective

measure of therapeutic success is currently available. Comparing visit frequency, high utilization and associated costs of care represent important surrogate measures of success. The goal would be to have migraine patients seek medical attention less often in the most appropriate setting and incur fewer costs for treatment (Litaker, 1996).

The following questions may now be asked. How well are the communities within Region 6 doing in managing a specific disease, migraines for example, as measured by outpatient visit frequency, most appropriate care setting and associated costs? How can Region 6 improve the management of this disease in its communities?

The objective of this Graduate Management Project (GMP) is to develop a regional method or prototype to gather and evaluate disease-specific patient and community information in order to establish patterns and variation. These patterns can then be evaluated with a goal of communicating successes and improving the regional health of the population with a particular illness.

This project will be accomplished by examining a diagnosis closely in three sample communities within the region. The diagnoses of migraine and headache in an outpatient setting will be used. Specifically, the information sought includes: (1) number of patients seeking care for migraines or headaches in fiscal year 1999 (FY99) in both the MTF and the network, (2)

number of migraine or headache visits by clinic or network provider specialty, and (3) patient identification and demographic information. Additionally, Region 6 seeks to develop a plan to proliferate disease-specific community-level information, variation and best practices throughout the TRICARE Southwest region.

This project will apply the prototype to three of the 42 recently defined Region 6 communities. The community concept will be explained in detail during the Methods and Procedures Section. To summarize, communities in Region 6 may not include a MTF and in those that do, the MTF may be large or small. The community may have all three main TRICARE Plan options available; it may have two, TRICARE Extra and Standard, or one, TRICARE Standard.

In order to obtain a true partial picture of the various communities, three different community types were selected. The Killeen community was chosen due to its large eligible beneficiary population and large Army MTF. The Oklahoma City community has an Air Force ambulatory care clinic and no hospital. Lastly, the Rio Grande Valley community was chosen due to its remote location, lack of MTF and lack of TRICARE Prime option.

The diagnosis of migraine headache was chosen to develop this prototype partly because suffering from migraine headaches

is the seventh most common reason for an outpatient visit (Diamond & Lyss, 1999). Population based studies have consistently shown that about 5% of men and 15%-17% of women suffer migraine attacks. Migraine headache is one of the most common conditions reported by health plan members in the managed care setting (Bowman, 1999). In the United States the estimated annual cost, including costs of direct medical care and lost productivity, exceeds $17 billion (Pryse-Phillips, et al., 1997).

Migraine is a chronic and at times debilitating condition that tends to afflict young people who are otherwise healthy and productive. Migraine sufferers, who are predominately between the ages of 25 and 55, are more likely to access the healthcare system, utilize more resources and incur more healthcare costs than non-migraine sufferers of similar age (Rapoport & Adelman, 1998).

Migraines can be expensive and difficult to treat and there is increasing discomfort about how this high-impact disease is currently managed. Currently, migraine treatment is often an acute and emergency driven system. A growing consensus is that the reactive, acute care approach may not be the best approach to achieve optimal migraine outcomes because migraine sufferers require regular, planned contact with providers (Parham, 1999). Therefore, the most appropriate location of care would not be

the Emergency Room or acute care clinic, but a primary care clinic or specialty clinic such as Neurology.

Statement of the Problem or Question

Region 6 is challenged to develop a method or process of obtaining and evaluating disease-specific community-level data in order to identify patterns and best practices and to communicate these regionally in an effort to improve population health outcomes.

Migraine headaches may affect over 20% of the national population and, therefore, may affect up to 200,000 of TRICARE Southwest's approximately 1 million eligible beneficiaries. The questions that this project will attempt to answer are:

1. How can this four-state region be divided into manageable sections for data collection?
2. Through what information systems and sources can the Lead Agent identify and gather community level disease-specific data, such as migraine and headache data? For example, who is being seen where, how often and for what? What data and sources are available to look at migraine and headache associated costs, for example cost per clinic visit? This question will be answered by looking at three sample communities in the region and the diagnoses of migraine and headaches using existing information systems and sources.

3. What are some potential community-level and regional benefits to collecting disease-specific data on visit frequency, location and associated costs? What are the potential benefits of proliferating best practices and improvement opportunities in migraine/headache management regionally? A community level benefit may be the shifting of patient visits from higher cost acute care or emergency clinics, to the most appropriate primary care clinic. Regional benefits may include communicating opportunities to improve and impacting resource allocation decisions.
4. What is one way to regionally proliferate disease-specific improvement opportunities and best practices? One option is to use the new Region 6 Governance structure to proliferate community disease-specific issues and recommendations in an effort to improve health outcomes.

Literature Review

The literature review focused on the following areas: TRICARE Southwest, population health, information systems and migraine headaches.

TRICARE Southwest.

TRICARE, the tri-Service managed care program for active duty and retired military personnel and their families, has 15 regions. TRICARE Southwest, or Region 6, is a mature, four-

state region with approximately one million eligible beneficiaries. Two major partners furnish healthcare delivery networks: Foundation Health Federal Services, based in Sacramento California, and Christus Health in Houston, Texas. The Region 6 mission is to optimize military health service operations in the region and the vision is to be the premier family of community health plans for our entire military family. Key result areas are population health, member-focused operations and regional fiscal performance. Under population health, essential functions include clinical initiatives, disease management, prevention and optimizing population health status.

The TRICARE Southwest Lead Agent Office functions as the administrative hub of the region, with a focus that spans a large geographical area and serves a diverse population. The Lead Agent works in partnership with all military services and their commands and is supported by an extensive provider network of military and civilian providers. This operational structure gives the Lead Agent Office a regional perspective that can be leveraged to improve the health of the population (Loper, 1999).

Population health.

The current Military Health System (MHS) Optimization Plan includes a focus on health in its reengineering approach. One of the critical MHS health components is population health

improvement. The plan states that savings will be derived from decreasing demand by improving the population's health. It also states that the MHS should use "best clinical practices" and other initiatives to maximize productivity, quality and consistency. (Military Health System Optimization Plan, 2000)

Medical care delivery has traditionally been decentralized with little coordination or continuity of care. The recent rise of managed care organizations increases the possibility for improving the health of the population by driving improvement and experimentation. Enrolling populations to clearly assigned clinics or providers can allow those clinics and providers to assume responsibility for health care on a population basis (O'Connor & Pronk, 1998).

Managed care organizations, to include TRICARE, are uniquely suited to implement population health initiatives. Populations are likely to be clearly defined and health care is usually provided via clinical health care delivery systems. Centralized services such as information systems, community relations, marketing, health promotion and disease management may aid in achieving population health improvement objectives. Although disease prevention and improvement of health status of large populations will likely reduce inappropriate demand, improve quality of life and prove to be cost effective, it is challenging to implement well-coordinated health improvement

strategies (Pronk & O'Connor, 1997).

Today, the nation is experiencing the twenty-first century paradigm shift that redefines the product of the healthcare system in terms of outcomes and population health status (Kindig, 1999). The overall objective is to improve the health of the population; therefore, a clear definition of target populations is essential. Population health improvement will have the greatest impact as part of an integrated health care delivery system. Managed care organizations such as TRICARE serve defined populations, have integrated clinical care delivery systems, and have well-developed medical information systems that provide essential information linkages (Pronk & O'Connor, 1997).

Information Systems and Sources

Information and data collection sources include the Defense Enrollment Eligibility Reporting System (DEERS) and the Corporate Executive Information System (CEIS). CEIS draws data from the Ambulatory Data System (ADS), the Composite Health Care System (CHCS) and the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS).

Defense Enrollment Eligibility Reporting System (DEERS).

DEERS is a worldwide database of military sponsors, families and others who are covered by TRICARE. The Defense Department uses DEERS to check those who are eligible for

TRICARE health care benefits. DEERS data includes: the category of beneficiary; patient identification number; sex; age; address, including zip code; eligibility and enrollment status (Defense Enrollment Eligibility Reporting System [DEERS], 2000).

Corporate Executive Information System (CEIS).

CEIS is a tri-Service system used to analyze aggregated data from all tri-Service MTFs and most recently, data from CHAMPUS. This system supports the Department of Defense (DoD), as well as Region and MTF level executive decision-making, to improve the efficiency and quality of military healthcare services. CEIS is a data warehouse, maintaining data from several of DoD's systems and integrating it to support various user requirements throughout the MHS. Data for CEIS is gathered from standardized sources such as CHCS, ADS, Expense Assignment System III (EASIII), DEERS and the Medical Expense and Performance Reporting System (MEPRS).

CEIS is the core decision-making information system for the MHS. Top-level health care administrators make decisions on MTF productivity and cost using CEIS data. CEIS provides clinical and financial information, patient and physician utilization data, average length of stay data, daily admissions, acuity summaries and operating room utilization. Senior health care officials make decisions about critical issues based on data, reports and information drawn from CEIS. Therefore, it is very

important that information systems such as CHCS, ADS, EASIII, DEERS and MEPRS, which feed into CEIS, are absolutely accurate (Corporate Executive Information System Program Office, 1998).

Appendix A includes several examples of Trendstar Report Specification Sheets for the EXCEL worksheets used to depict MTF data collection for migraine and headache. The Specification Sheets document the data element used or chosen when doing a Trendstar Report. All the data in the reports and Excel spreadsheets are data from the Standard Ambulatory Data Record (SADR) sent to the CEIS Data Warehouse and extracted using the Trendstar software.

Ambulatory Data System (ADS).

ADS is a detailed ambulatory data collection system that assists the MTF commanders, Lead Agents, and other decision-makers to evaluate the cost, quality and availability of the care provided in the direct care system. ADS is considered an encounter data collection system and not a workload or a billing system. ADS collects data from the providers about diagnosis and procedure levels. This information is then provided to MTF and clinic administrators as an accurate clear picture of what diagnoses patients are being seen for and what procedures are being performed (Ambulatory Data System Overview [ADS], 1998).

ADS captures outpatient episodes of care at an MTF, resulting in the production of the SADR. ADS generates the SADR monthly and sends it to the CEIS data warehouse (ADS, 1998).

Composite Health Care System (CHCS).

CHCS provides worldwide-automated medical information system support to all MTFs. Functional areas included in CHCS are: patient registration, admission disposition, and transfer; inpatient activity documentation; outpatient administration data; appointment scheduling; laboratory; drug/laboratory test interaction; quality improvement, radiology; clinical dietetic administration; pharmacy; results reporting and order entry.

CHCS provides data to CEIS and to the Worldwide Workload Report (WWR). The WWR is a system for the collection of inpatient, outpatient, and ancillary medical workload data for the MTF that is summarized monthly for upward reporting to comply with the requirements of Department of Defense Instruction (DODI) 6015.23 (Introduction to the Worldwide Workload Report User's Manual Draft, August 1998).

Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) data.

Although the Lead Agent has access to the Foundation Health Federal Services Data Base using Business Objects, the CEIS information on CHAMPUS claims is determined by the Information Systems and Data Analyst experts at the Lead Agent to be

superior and more complete. For this reason, this project will use the CHAMPUS information in CEIS for network data collection at the community level. This information includes: beneficiary category, age, ICD-9 code, billed amount and the amount paid by the government per claim. At this time CHAMPUS data is available in CEIS for the first three quarters of FY99 (J. Bowman, CEIS Regional Trainer, and B. Lambert, Region 6 Chief Data Quality and Analysis, personal communication, January 4, 2000).

Migraine Headaches

Using CEIS, this prototype obtained community-level direct care and CHAMPUS migraine and headache data for the three selected communities. According to the National Headache Foundation, over 45 million Americans get chronic, recurrent headaches and nearly half of all migraine sufferers seek emergency room care. Fifteen percent report five or more emergency room visits within a year, making migraines a good disease on which to focus population health improvement efforts. Like an asthmatic, a migraine patient may go weeks without an attack and then have a major attack that affects his/her ability to function.

Although migraine headaches are common, they are under-recognized and under-treated (Pryse-Phillips, et al., 1997). Migraine headaches cannot be diagnosed with a screening tool or

a blood test but are based on the patient's own subjective description. The best way to diagnose a migraine headache is through a comprehensive medical history and thorough physical exam. The type of headache must be clarified before a treatment plan is developed; this may be determined using the International Headaches Society (I.H.S.) Criteria for Diagnosis of Primary Headache Disorder. The headache history should include the type of headache, onset, frequency, site, duration, severity and character, sleep history, family history, allergies, present medications and medical and psychosocial history. According to the I.H.S., photophobia/phonophobia or nausea and/or vomiting must be present and a history of certain disorders must be ruled out before a diagnosis of migraine can be made.

This GMP used the ICD-9 code for headache, 7840, and the following migraine ICD-9 code series to identify outpatient headache and migraine clinic visits and migraine and headache sufferers.

Table 2

ICD-9 Code series 346XX, migraines

ICD-9 code	**Definition**
34690	Migraine unspecified
34600 and 34601	Classic migraine
34610	Common migraine
34620	Variant migraine
34680	Other migraine

The ICD-9 codes for both headaches and migraines were used because headaches are potentially undiagnosed migraines and migraines may be incorrectly coded as headaches. Generally, a migraine is defined as five unsuccessfully treated headache attacks lasting 4-72 hours having at least two of the following characteristics: (1) unilateral location (2) pulsating quality (3) moderate or severe intensity (inhibits daily activities) and (4) aggravated by physical activity (Anonymous, 1998).

Provider education regarding migraine identification, diagnosis, attack triggers and management is essential, particularly in the primary care setting. The provider should be well versed in the different treatment modalities and medications available (Pryse-Phillips, et.al., 1998). The goals of migraine treatment should be reduction of frequency and severity of headaches, headache relief and a return to normal

functioning when they occur (Pryse-Phillips, et al., 1997).

Methods and Procedures

Region 6 seeks to answer the question, "What is the health of your Region?" Therefore, a method to obtain and evaluate disease-specific information on a regional basis must be developed. This project developed a method of obtaining and evaluating outpatient disease-specific information on a community level and developed a method to proliferate disease-specific patterns and best practices throughout the region.

This project had four main steps. The diagram below portrays the four main steps in this prototype. Each step will be broken down in further detail in subsequent paragraphs.

Prototype Steps

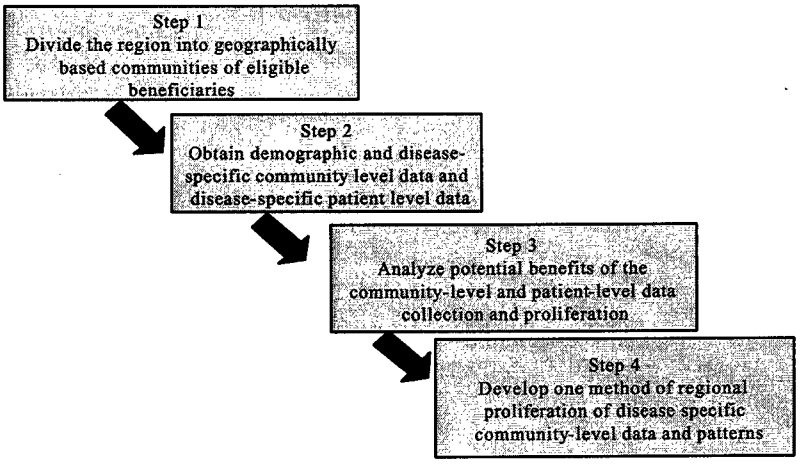


Figure 1. Prototype Steps for Obtaining and Evaluating Disease-specific, Community-level Data.

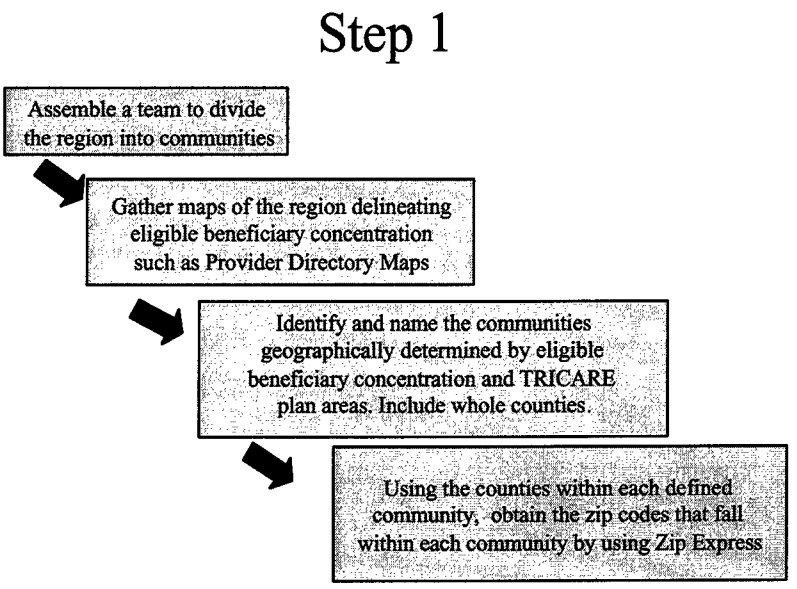


Figure 2: Step 1 of the Prototype to Obtain and Evaluate Disease-specific, Community-level Data.

The first step is to assemble a team to divide the region into communities, geographically determined by eligible beneficiary population concentration. Region 6 had a four-person team, which consisted of Major Judith Valdez, Major Gregory Stewart, Captain Barna Lambert and the author of this GMP. Geographical communities were identified using maps included in the following seven Winter/Spring 1999 Foundation Health Federal Services/TRICARE Southwest Provider Directories: North Texas, Greater San Antonio, Arkansas, Central Texas, South Texas, Louisiana, and Oklahoma.

Next, the team should identify which counties were included

within the geographical boundaries of each community. By using the county information, zip code information can be obtained utilizing the Zip Express web site www.getzips.com. Zip Express contains 42000+ U.S. zip codes. One can search by zip code, city, county, state or area code. The team may obtain zip code information for geographical communities by inputting the identified counties and state. The results of this step will be explored in detail in the Results and Discussion section of this GMP.

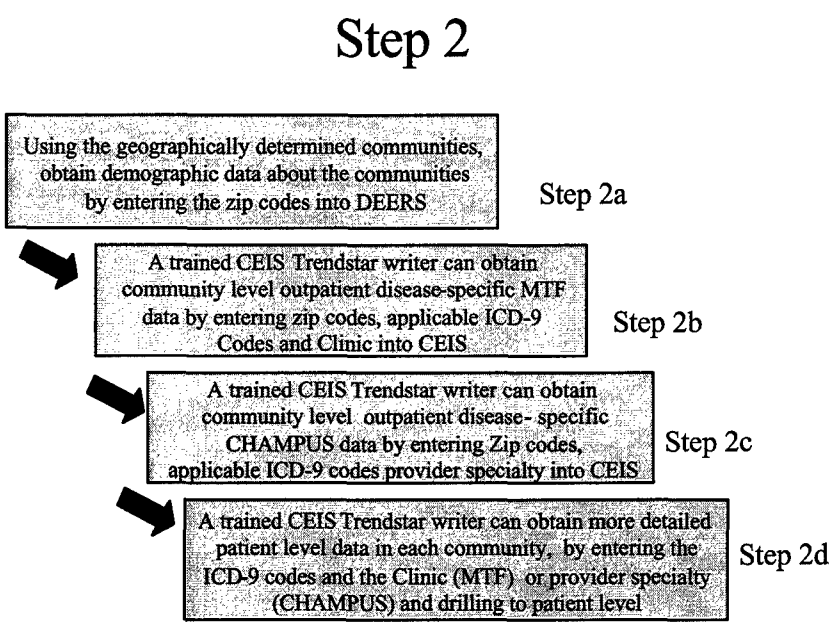


Figure 3: Step 2 of the Prototype to Obtain and Evaluate Disease-specific, Community-level Data.

In the second step, by using these geographically determined communities as a starting point, one can obtain data from the

DEERS database regarding the population in that community. This information can include the number of eligible beneficiaries, broken out by age, sex, beneficiary category and enrollment status. It can give information on whether an enrolled beneficiary is enrolled to the MTF or network.

A trained CEIS Trendstar writer can obtain community level outpatient disease-specific MTF data by entering zip codes, applicable ICD-9 Codes and Clinic into CEIS. Specifically, one can obtain the number of patients seeking care for migraines or headaches in FY99 in the MTF and the number of migraine or headache visits by clinic. Valuable information includes knowing where a particular migraine or headache visit took place; for example, the emergency room, neurology clinic or primary care clinic. In CEIS one can also find the Patient Level Cost Accounting (PLCA) visit costs per clinic to compare clinic visit costs within the MTF. PLCA costs include direct, support, clinician salaries and all ancillaries except pharmacy.

A trained CEIS Trendstar writer can also obtain community level outpatient disease-specific CHAMPUS claim data by entering zip codes, applicable ICD-9 codes and provider specialty into CEIS. Specifically, one can obtain the number of patients filing primary diagnosis claims for migraines or headaches during the first three quarters of FY99 in the network and the number of migraine or headache visits by provider specialty.

One can also obtain government paid CHAMPUS claim amounts.

Finally, further Trendstar reports can be run to determine the identification number and demographic information of the patients presenting with a specific ICD-9 code and how many visits each has had for that presenting complaint. Using the MTF data, CEIS can indicate where the patient was seen, which provider he saw, how many times the patient was seen and when. Using CHAMPUS data, CEIS can indicate which provider specialty saw the patient, how many times the patient was seen and when. Through this method, one can identify the patients that are seen most frequently for that ICD-9 code. The results of this step will be explored in the Results and Discussion section.

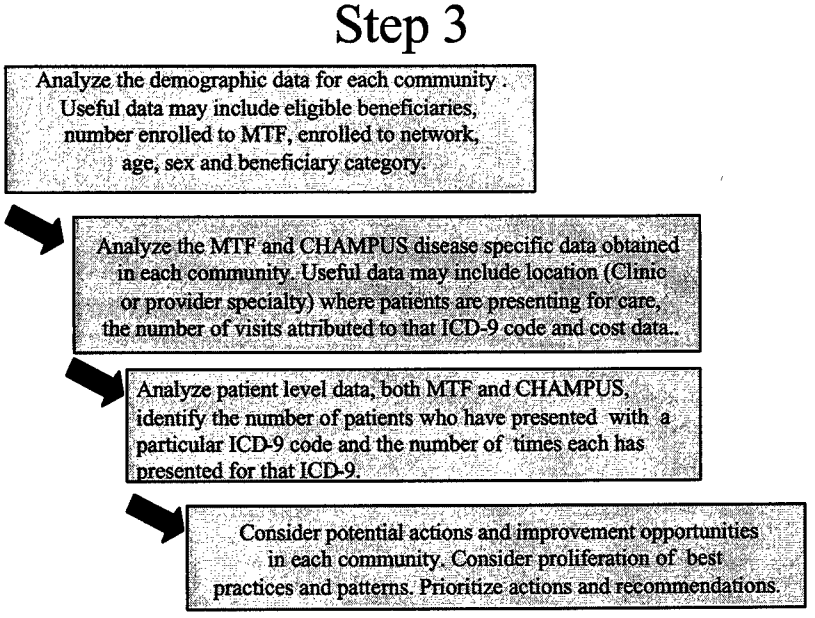


Figure 4: Step 3 of the Prototype to Obtain and Evaluate Disease-specific, Community-level Data.

The third step is to identify potential benefits of this community-level data collection and the potential benefit of the proliferation of disease-specific best practices regionally. The most significant potential benefit to having this community level information is to provide insight. One can use this information to ask questions and to make intelligent region wide resource allocation and healthcare delivery decisions.

For the migraine example, a community may be found to have migraine and headache patients visit the emergency room most frequently. If one knows the Emergency Room (ER) cost in that community is high and one knows that the ER is not the most appropriate place for migraine headache management, then one would ask questions about that community. Patients may be reporting to the ER because there is no Neurology clinic, pain clinic, community mental health clinic, or provider that manages migraines, available in the area.

In a non-MTF community, the Lead Agent may decide after cost analysis and thorough discussion with the appropriate network partner that a clinic or provider source be developed in that network area. Additionally, if an MTF is in the community, Region 6 may confer with the Intermediate Service Commands and the MTF Commander to encourage the development of a pain clinic or expand the scope of the primary care clinics in the MTF to include migraine management. Region 6 might also encourage the

MTF to train certain providers to manage migraines and have the patients assigned to these primary migraine managers. Another excellent option is to case manage, or closely manage and coordinate the care of, the most frequently presenting patients.

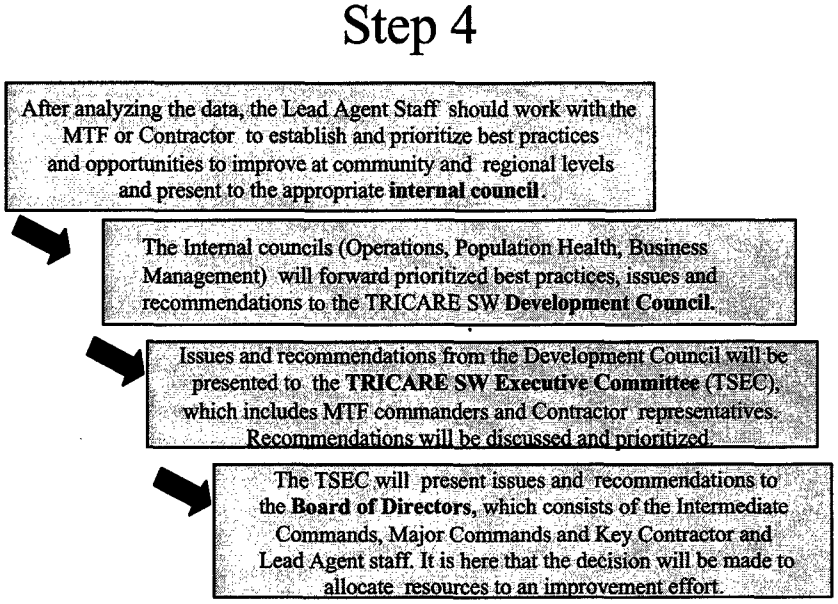


Figure 5: Step 4 of the Prototype to Obtain and Evaluate Disease-specific, Community-level Data.

The fourth and final step is to identify a method of regional proliferation of community disease-specific patterns and best practices in an effort to improve population health outcomes. One method is to follow the new TRICARE Southwest Governance Structure. After the Lead Agent staff and applicable MTF or Contractor representative analyze the data and identify an issue or opportunity to improve, that issue should be brought

to the appropriate internal council. The internal councils (Population Health, Operations, Business Management) will evaluate and prioritize the issues and recommendations. The internal councils will then present the issues and recommendations to the Development Council. The Development Council will coordinate the resolution of issues at the community or Lead Agent level if at all possible.

The TRICARE Southwest Executive Committee (TSEC) will receive those issues that cannot be resolved at the Lead Agent level, or those issues that have broad application and regional impact. The TSEC consists of the MTF commanders, key Foundation Health Federal Services staff and key Lead Agent staff. After prioritization and further evaluation of the issues and recommendations as needed, the TSEC will forward the prioritized list of recommendations to the Board of Directors for action. It is the Board of Directors who will make region wide resource allocation decisions.

RESULTS and DISCUSSION

Step 1

The Region 6 four-person team initially identified 38 communities, focusing on the TRICARE plan areas and beneficiary concentration depicted on the maps. TRICARE Prime, Extra and Standard sites closely resembled beneficiary distribution. The

maps showed TRICARE Prime in heavily populated areas, TRICARE Extra in less populated areas and TRICARE Standard in the least populated areas.

Upon further evaluation the 38 communities were reduced to 36 by combining three communities into one, Texoma. In addition to these 36 defined communities, the team identified several TRICARE Standard only, sparsely populated, outlying areas. These outlying areas, without clear beneficiary concentration, were grouped by location into six outlying area communities. Appendix B contains four maps; the first depicts the 42 defined communities, color-coded for ease of reading. The last three maps depict the Killeen community, Oklahoma City Community and the Rio Grande Valley community, which are the sample communities studied during this project. The following table, Table 3, lists the 42 defined communities. Twelve communities have at least one MTF in their geographical area (these are starred in the table); the others have only network or civilian provider support.

Table 3

REGION 6 Geographical Communities

ABILENE TX **	LAKE CHARLES LA
AMARILLO TX	LITTLE ROCK AR**
ANGELINA TX	LOUISIANA Outlying Area
ARKANSAS Outlying Area	LUBBOCK TX
AUSTIN TX	MIDLAND TX
BEAUMONT TX	MONROE LA
BLYTHEVILLE AR	NORTH TEXAS Outlying Area
BRAZOS TX	NW OK PRIME NON-CATCHMENT
CENTRAL TEXAS Outlying Area	OKLAHOMA CITY OK**
CORPUS CHRISTI TX**	OKLAHOMA Outlying Area
DALLAS-FT WORTH TX	RAPIDES LA
DEL RIO TX**	RIO GRANDE VALLEY TX
FAYETTEVILLE AR	SAN ANGELO TX**
FT SMITH AR	SAN ANTONIO TX**
GARFIELD OK**	SHREVEPORT LA**
GRAYSON TX/OK	SOUTH TEXAS Outlying Area
GREGG TX	TEXARKANA TX/AR/OK
HOUSTON TX	TEXOMA TX/OK**
JONESBORO AR	TULSA OK
KILLEEN TX **	VERNON LA**
LAFAYETTE LA	VICTORIA TX

Next, the team identified which counties were included within the geographical boundaries of each community. Using the

Zip Express web site the team obtained zip code information for the geographical communities in Region 6 by inputting the previously identified counties and state. Although not heavily populated or clearly geographically defined, the zip codes from the six identified outlying area communities were included to ensure that every single zip code in Region 6 was accounted for in one of the communities. This is essential for region wide data collection. Appendix C contains EXCEL spreadsheets of zip codes for three of the 42 communities: the Killeen community, Oklahoma City community and the Rio Grande Valley community.

The first step successfully divided Region 6 into geographically based communities of eligible beneficiaries. At this time there are 42 communities, the number of communities could change as Region 6 learns more about the region. While defining the communities, the highest level of TRICARE plan available in that community was determined. This information is beneficial to TRICARE plan managers and can be used in marketing to effect enrollment or plan availability.

Step 2

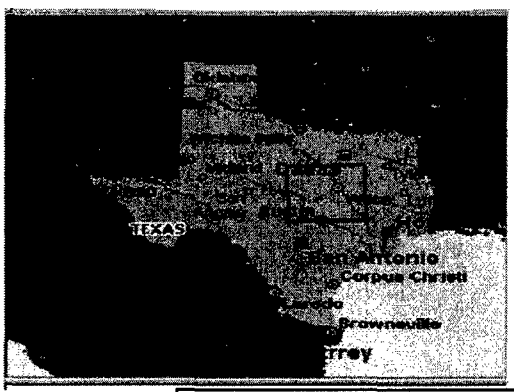
Demographic data about each community was successfully obtained from DEERS. This is valuable information about eligible beneficiaries in each community, defining the population by age, beneficiary category, and enrollment status. Also included in the second step were CEIS data collection on ne

sample diagnosis, which included the ICD-9 codes of 7840 and the 346XX series, in the three sample communities.

Step 2a

Once zip codes are determined, one can search DEERS for number and category of eligible beneficiaries. Figure 6 provides an overview of the Killeen community demographic information.

Killeen Community Demographics

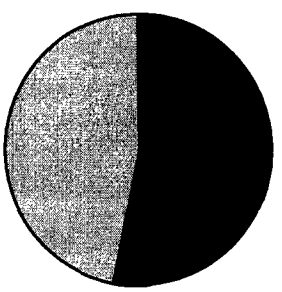


Counties
Bell
Bosque
Burnet
Coryell
Falls
Hill
Lampasas
Limestone

Total Eligible Beneficiaries
157,047

Not Enrolled

Enrolled to
Ft Hood MTF
74,182 (47%)



Enrolled to Network
12,828 (8%)

Figure 6. Killeen demographic information example. This demographic data was obtained using DEERS, and the Microsoft application of Map Point 2000

Appendix D contains EXCEL spreadsheets with demographic information on the Killeen community, the Oklahoma City Community, and the Rio Grande Community. This information includes eligible beneficiary population by age, and enrollment numbers according to the DEERS database as of January 2000. Per DEERS, the following paragraphs summarize the demographics in each of the three communities.

In the Killeen community, there are 157,047 eligible beneficiaries. Of those, 41,422 are Active Duty, 59,427 are Active Duty family members and 56,198 are retirees and their family members. Of the 87,010 enrolled members in the Killeen community, 74,182 are enrolled to the MTF and 12,828 are enrolled to the civilian network.

In the Oklahoma City Community, there are 61,936 eligible beneficiaries. Of those, 7,828 are active duty, 14,070 are active duty family members and 40,038 are retirees and their family members. The retirees and their family members account for 65% of the total eligible beneficiaries in this community. Of the 22,861 beneficiaries enrolled in the Oklahoma City Community, 18,376 are enrolled to the MTF and 4,485 are enrolled to the civilian network.

In the Rio Grande Valley Community, there are 7,114 eligible beneficiaries. Of those 1,161 are active duty, 1,725 are active duty family members and 3,270 are retirees and their family

members. Although, the Rio Grande Valley Community is principally a TRICARE Extra and Standard community, DEERS shows some enrolled population. Of the 543 beneficiaries enrolled in the Rio Grande Valley Community, 326 are enrolled to an MTF, requiring travel, and 217 are enrolled to the civilian network.

Step 2b

As discussed in the Introduction, comparing visit frequency, utilization and associated costs of care represent important surrogate measures of success. The community-level disease-specific data collection focused on outpatient visit frequency, location of treatment, and some associated costs. Specifically, the data collected included the number of patients in the MTF or network seeking care for migraines or headaches in FY99. It also included the number of migraine or headache visits by clinic or provider specialty and patient-level identification and demographic information. The goal would be to have migraine patients seek medical attention less often in the most appropriate setting and incur fewer costs for treatment.

The following disease-specific data were collected using CEIS for each of the three communities. The Killeen Community and the Oklahoma City Community contain both MTF and CHAMPUS data. The Rio Grande Valley community contains only CHAMPUS data. This data is summarized in Appendix E.

We obtained MTF disease-specific data by entering CEIS and

writing a Trendstar report as discussed, using ICD-9 codes for migraines (ICD-9 series 346XX) the ICD-9 code for headache (7840) and the zip codes for the community in question.

Killeen Community MTF data

In CEIS, outpatient visits for the primary diagnosis of migraine and headache in the Killeen MTF, or Darnall Army Community Hospital (DACH), totaled 7,785 for FY99. The total number of visits coded with the primary diagnosis of migraine (ICD-9 series 346XX) was 4,704. The number of clinic visits with a primary diagnosis of headache (ICD-9 7840) was 3,081.

As outlined in Table 4 below, at DACH, the two clinics seeing the highest numbers of patients with the primary diagnosis of migraine are the Neurology Clinic and the Community Mental Health Clinic, both of which can provide a more consistent and comprehensive approach to migraine management than the emergency room. Two family care clinics were third and fourth and the emergency room had the fifth highest number of migraine visits at DACH in FY99.

Table 4

DACH FY99 Migraine Visits By Clinic

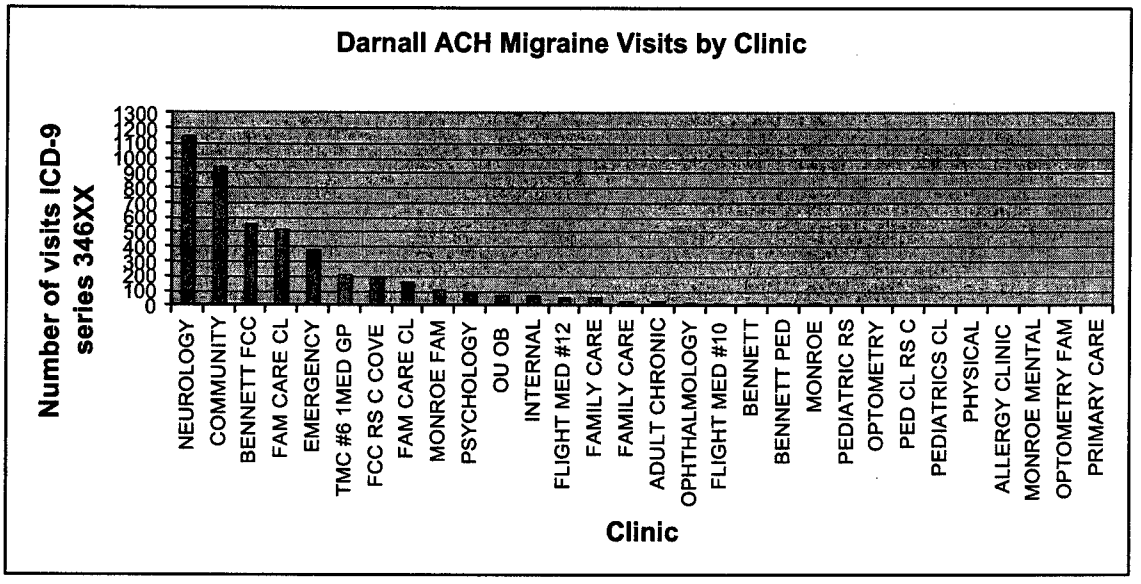
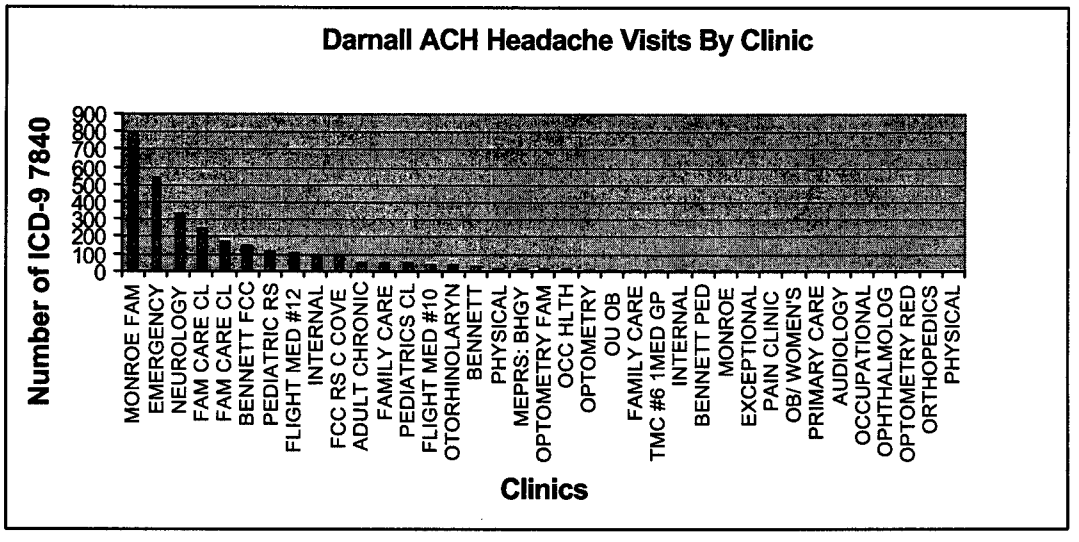


Table 5

DACH FY99 Headache Visits By Clinic

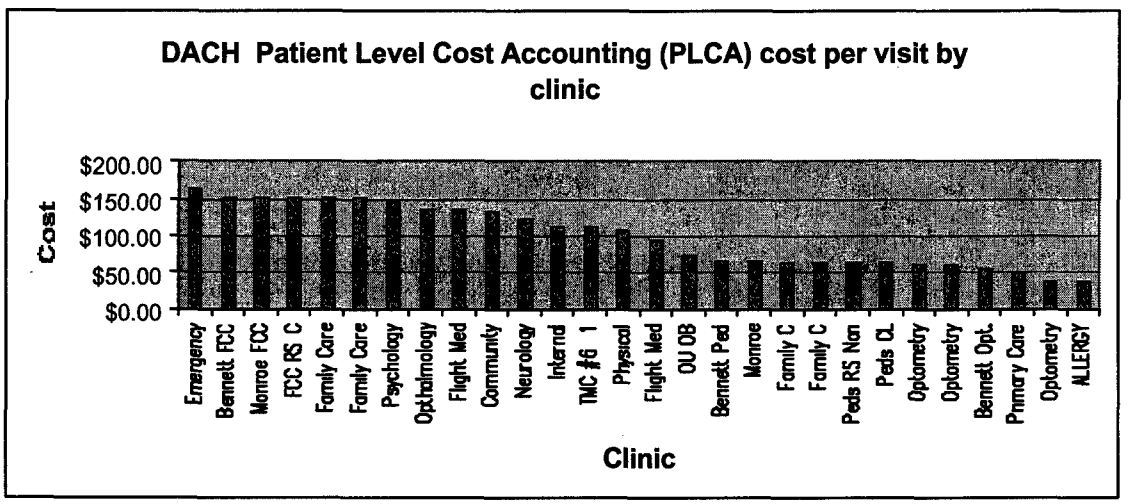


However, as seen above in Table 5, the two clinics seeing the highest number of patients with the primary diagnosis of headache are the Monroe Family Care Clinic and the Emergency

Room. Because specialty referrals are often not made until an actual diagnosis of migraine is assigned, the patients presenting with ICD-9 code 7840, headache, should be carefully evaluated to rule out a diagnosis of migraine. If a diagnosis of migraine is made, the patient should be referred to the most appropriate clinic for continued care.

Table 6

DACH PLCA cost per visit



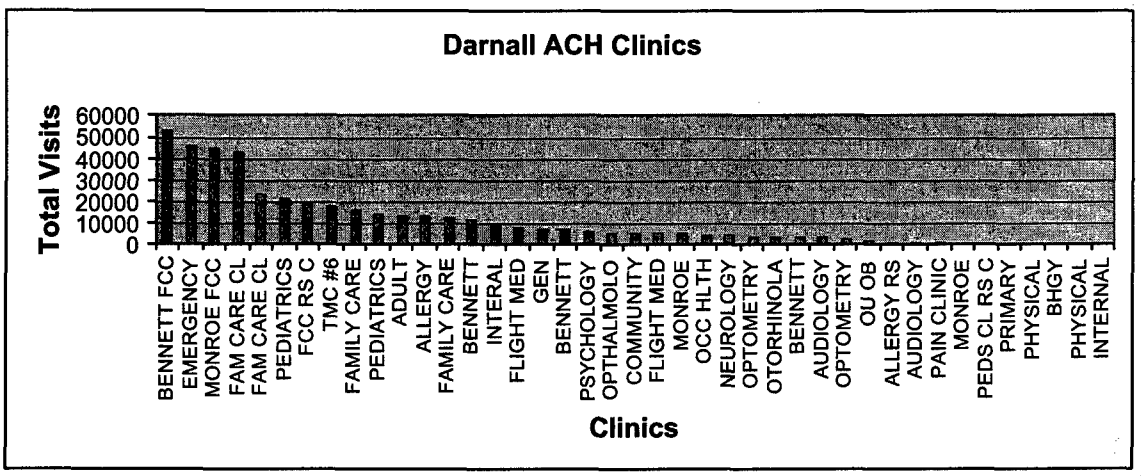
Interestingly, as outlined in Table 6, using Patient Level Cost Accounting (PLCA) at DACH, the cost per migraine/headache visit for Neurology Clinic and the Community Mental Health Clinic is approximately $123.00 and $133.00 respectively, versus $163.00 for the emergency room and $150.57 for the Monroe Family Care Clinic. One might have expected to see that specialty clinics had higher visit costs than primary care clinics, but this was not the case at DACH. However, the Emergency Room cost

was highest, as anticipated.

Table 7 outlines the total clinic visits of most clinics at DACH. Based on FY99 CEIS information the total number of clinic visits for DACH was 760,657. The total number of DACH primary migraine and headache visits was 7,785. Although primary migraine and headache visits at DACH are only 1.02% of the total clinic visits, this number was much higher when looking at the Neurology Clinic and the Community Mental Health Clinic. The total number of clinic visits in the Neurology Clinic was 4,330. Migraine visits were 1,154, 26.7% of the total, and headache visits were 332 or 7.67%. In the Community Mental Health Clinic, the total number of clinic visits was 5,610 and the number of clinic visits for migraines was 948, or 17% of the total visits. The combined number of migraine and headache visits was 1,486 or 34% of the Neurology Clinic Visits in FY99. It is clear that migraine and headache diagnosis and treatment encompass a significant portion of the patient care provided in the Neurology Clinic and the Community Mental Health Clinic. The total number of patients presenting to DACH at least once during FY99 with the primary diagnosis of migraine or headache is 4,085, which is 5.6% of the total patients enrolled to DACH.

Table 7

DACH Total FY99 Clinic Visits

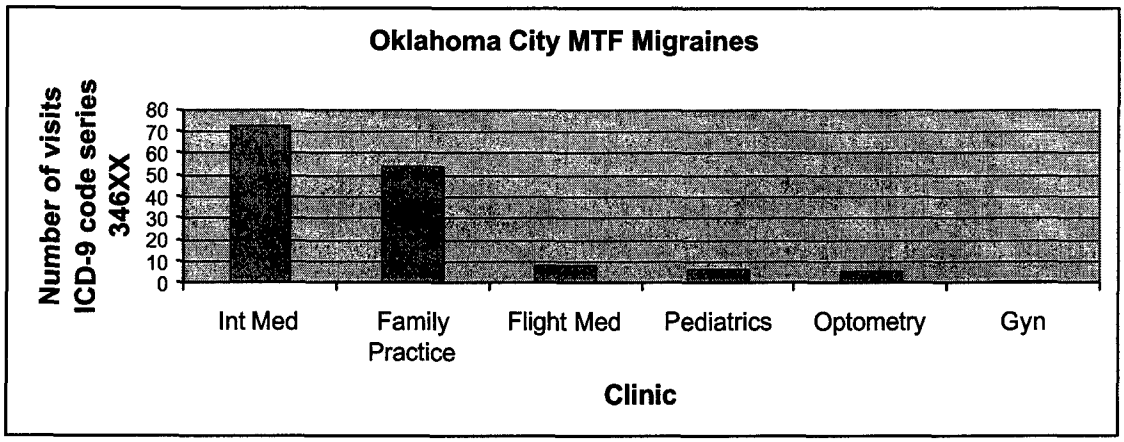


Oklahoma City Community MTF

Using CEIS, outpatient visits for the primary diagnosis of migraine and headache in the Oklahoma City MTF numbered 988 for FY99. The first three quarters of FY99 Oklahoma City CHAMPUS claims for the primary diagnosis of migraine or headache numbered 1085. The overall total in the Oklahoma City Community for FY99 was 2073. As indicated in Table 8, the clinics that saw the most patients with the primary diagnosis of migraines were the Internal Medicine Clinic and the Family Practice Clinic. This is encouraging in that migraine sufferers appear to be receiving care in clinics that can provide regular, planned contact with providers.

Table 8

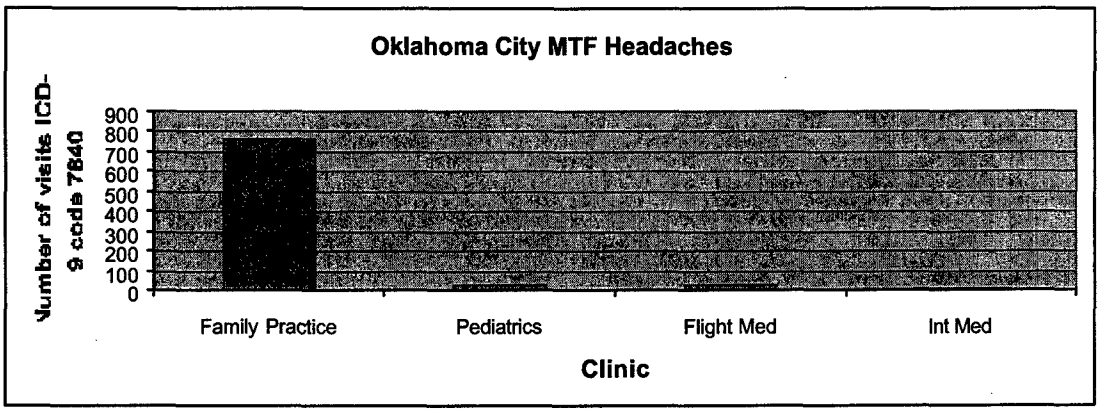
Oklahoma City MTF FY99 Migraine Visits by Clinic



As seen below in Table 9, the MTF clinic that saw by far the most patients with a primary diagnosis of headache was the Family Practice Clinic. The number of patient visits coded as headache, 839, vs migraine, 149, at the MTF may indicate a requirement for provider or coder education in accurately diagnosing or coding migraines. It is important to note that the Oklahoma City MTF does not have an Emergency Room.

Table 9

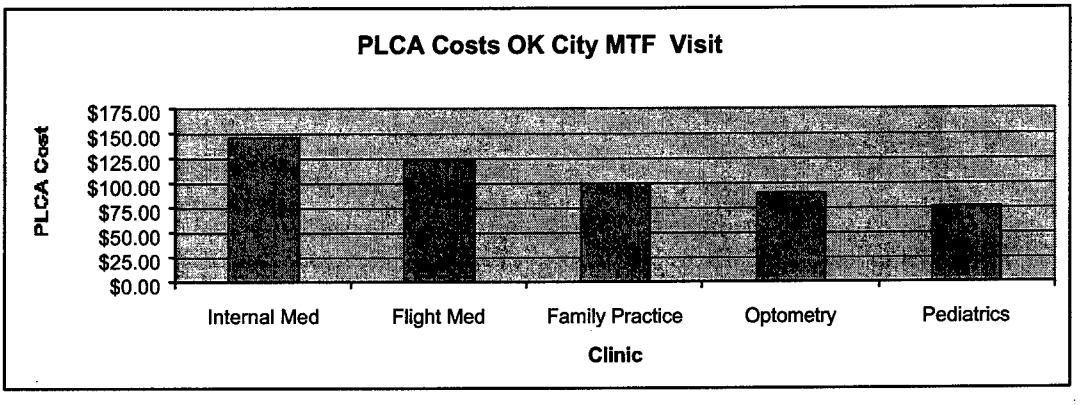
Oklahoma City MTF FY99 Headache visits by Clinic



As reflected below in Table 10, the PLCA cost for Internal Medicine Clinic was $145.06, Flight Medicine was $121.66 and the PLCA cost for Family Practice was $98.97. Therefore, in this MTF there may be lower clinic visit costs associated with treating migraines and headaches in the Family Practice Clinic.

Table 10

Oklahoma City MTF PLCA Costs per visit FY99



Step 2c

The first attempt at collecting non-MTF, civilian provider care data in each community proved to be more difficult than obtaining MTF data. This was due to the fact that information systems in the past have been centered on MTFs and catchment areas, not communities. This attempt included using the catchment area data on CHAMPUS claims billed, and obtaining a partial picture of network use in Killeen community.

The DACH catchment area includes some of the same area as our defined Killeen community. By using CEIS Trendpath, one can

obtain data about the catchment area. The most recent complete data available is FY98 data. The Drill Down sequence is Quantum, Trendpath, Resource Management, FY98 CEIS Reg 6 CHAMPUS Expenditure Analysis, FY98 OPD (catchment area, gender, age, ICD-9 DX, CPT 4), Drill level 1 (0110 Darnall ACH), Drill level 2 (male or female), Drill level 3 (age break out), and Drill Level 4 (ICD-9 codes 34690, 34600, 34610, 34620, 34611, 34680, 34691 and 7840).

Table 11 is based on the most complete and current CHAMPUS catchment area data (FY98) retrieved from CEIS. Table 11 is constructed using this DACH catchment area CHAMPUS data for migraine/headache, using the number of health services column and the migraine and headache ICD-9 codes listed above.

Table 11

DACH Catchment Area FY98 CHAMPUS information: migraine and headache data

Age	Female	Male	Total
5-14	23 (17 headache)	30 (21 headache)	53
15-17	14 (10 headache)	8 (0 headache)	22
18-24	98 (44 headache)	2 (0 headache)	100
25-34	168 (72 headache)	2 (1 headache)	170
35-44	128 (29 headache)	8 (3 headache)	136
45-64	156 (47 headache)	20 (7 headache)	176
Total	587	70	657

The second attempt at network data collection proved to be more useful. Because the catchment area data in CEIS provided an incomplete picture of the non-MTF community, the information must be obtained differently in order to provide catchment and noncatchment area information on the Killeen community. By writing Trendstar Reports using CHAMPUS data newly received to CEIS for the first three quarters of FY99, one is able to obtain CHAMPUS data based on the 42 defined communities, using the zip codes for each community.

Some of the Trendstar data obtained was mapped into Trendpath for ease of use by the staff. At this time Region 6 has access to CHAMPUS data in all communities with Quantum Trendpath drill down level one being the community, level two being the specialty area and level three being the ICD-9 code.

By following this sequence one can obtain the total number of migraine and headache CHAMPUS claims by specialty in each community. By drilling down from community to provider specialty to ICD-9 code one is able to determine the number of migraine/headache patients presenting to which specialty in the non-MTF network or civilian sector. CHAMPUS information can include number of outpatient visit claims per ICD-9 code, age break out and provider specialty per ICD-9 code, billed and government paid amounts.

Because Emergency Room visits did not show up on the

Trendstar report for provider specialty, this project pulled emergency room visit CHAMPUS data using the Evaluation and Management (E&M) codes specifically for the Emergency Room (99281-99285) and drilled down to the specified ICD-9 codes. Pharmacy visits attributed to the 7840 or 346XX ICD-9 series may be included in this initial data collection. It is recommended that the pharmacy claim information be removed from further CHAMPUS visit data collection in CEIS by using the pharmacy E&M codes to delete them and leave only actual visit claim data.

Killeen Community CHAMPUS

The CHAMPUS outpatient claims for the primary diagnosis of migraine and headache for first, second and third quarter FY99 in this community totaled 2,115. Headache claims totaled 1,074 and migraine claims totaled 1,041. Fourth quarter FY99 CHAMPUS claims data are not available at this time.

Table 12 outlines the first three quarters of FY99 CHAMPUS claim numbers for migraine and headache claims in the Killeen community broken out by sex. There was an almost equal number of CHAMPUS claims filed for headaches and migraines. As anticipated based on the Literature Review, the majority of patients filing claims for the primary diagnosis of migraine and headache in the Killeen Community are female.

Table 12

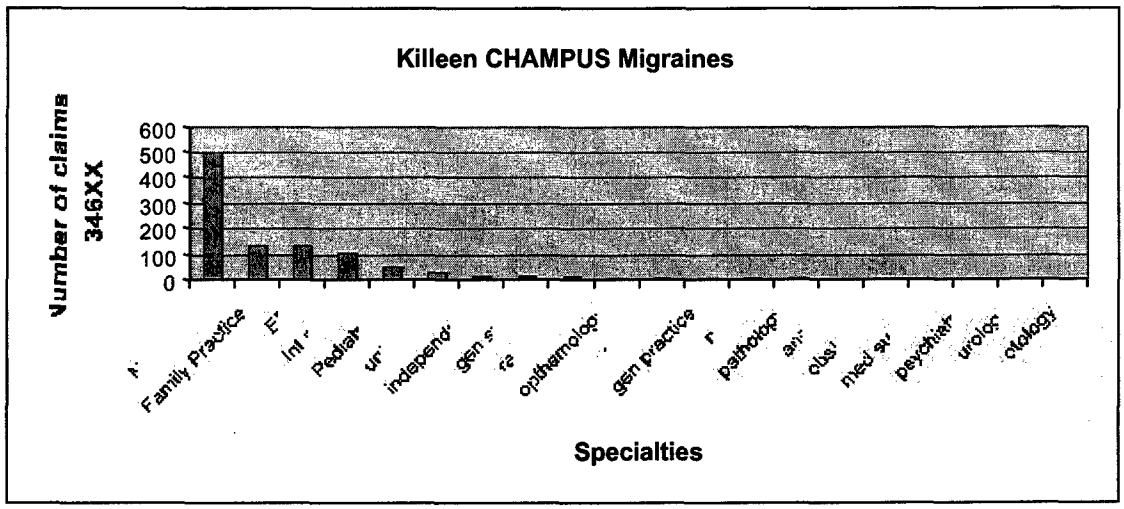
First Three Quarters FY99 Killeen community Migraine and Headache CHAMPUS Claims

ICD-9 codes	Number of claims Female	Number of claims Male	Totals
7840	777	297	1074
Total Headache	**777**	**297**	**1074**
34600	144	24	168
34601	9	0	9
34610	41	13	54
34611	25	0	25
34620	16	5	21
34621	10	1	11
34680	18	4	22
34681	1	0	1
34690	489	67	556
34691	158	16	174
Total Migraine	**911**	**130**	**1041**

Table 13 below outlines CHAMPUS claim numbers for migraines for the first three quarters of FY99 by provider specialty. It shows that the majority of CHAMPUS migraine patients are seen by the Neurology specialty in the Killeen community, followed distantly by Family Practice and the emergency room. This was also the case in the DACH data collection for migraines; the clinic seeing the most migraine sufferers was the Neurology Clinic.

Table 13

Killeen Community CHAMPUS claims ICD-9 code 346XX by Provider Specialty, first three quarters of FY99



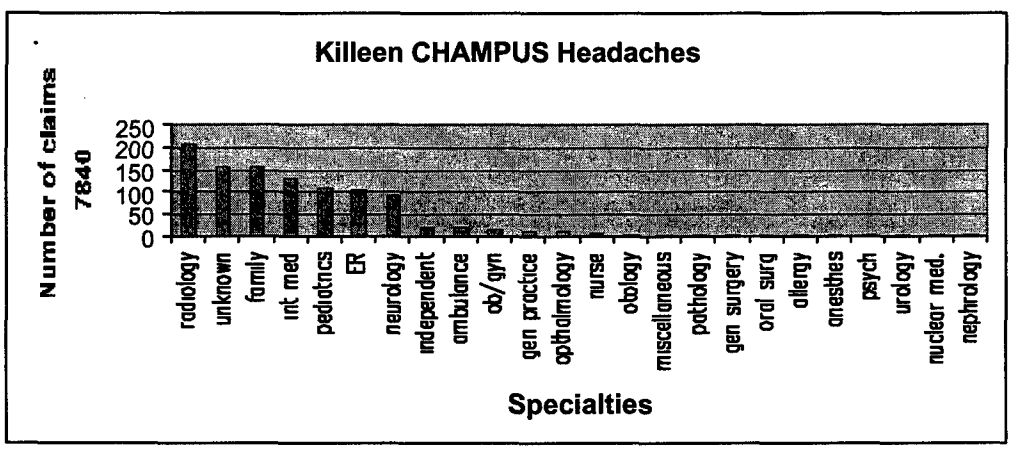
This is encouraging because the Neurology clinic or specialty may be one of the most appropriate care settings for migraine sufferers. The Neurology specialty had 496 CHAMPUS claims for migraine treatment and 94 claims for headache treatment. Migraine and headache claims accounted for 26% of the total claims of the Neurology specialty. It is particularly encouraging that the Emergency Room is not the location to which migraine sufferers present most. This indicates that the medical community may understand that migraine sufferers require planned, regular contact with a trained provider and that the acute care, reactive approach is not effective in managing migraines. It appears that migraine sufferers in the Killeen

community may be receiving proper consults to specialty services.

However, from the data seen below in Table 14, it is difficult to obtain an understanding of which specialty sees the majority of headache sufferers. Table 14 outlines the CHAMPUS claims for headache for the first three quarters of FY99 by provider specialty.

Table 14

Killeen Community CHAMPUS claims ICD-9 code 7840 by Provider Specialty, first three quarters of FY99



Interestingly, the top three specialties seeing the most patients with the primary diagnosis of headache are Radiology, unknown and Family Practice. This data collection includes CHAMPUS diagnostic service claims as well as clinic visit claims attributed to the 346XX and 7840 ICD-9 codes. This made it difficult to obtain a picture of which specialty sees the most headache patients because it is not only clinic visit data.

Also, as seen in Table 14 and below in the Oklahoma City non-MTF Community, a certain number of claims were filed with specialty unknown. This limits the accuracy of the data because we do not know which specialty provided that migraine or headache care. This may be a data collection or data entry problem that needs to be corrected.

Table 15

Killeen Community CHAMPUS claims ICD-9 codes 346XX/7840 paid by government, for the first three quarters of FY99.

Killen Community CHAMPUS	Number of claims	%of claims Paid	Government Paid
Migraine non ER	909	77%	$51,573
Migraine ER	132	86%	$21,316
Headache non ER	968	83%	$147,100
Headache ER	106	80%	$20,209
Total	2115		$240,198

As seen above in Table 15, the migraine and headache claims the government has paid in the Killeen CHAMPUS community for the first three quarters of FY99, total almost $250,000. As seen above, many claims are not yet paid and the data does not include fourth quarter FY99. This data not only includes clinic visits, it also includes diagnostic services and probably pharmacy visits. The non-ER headache claims total is the highest; this may be due to diagnostic services provided. For

comparison purposes, keeping in mind that many CHAMPUS claims are not yet paid, all CHAMPUS claims paid by the government in the defined Killeen community the first three quarters of FY99 totaled approximately $12,892,622.

Oklahoma City CHAMPUS

The first three quarters of FY99 Oklahoma City CHAMPUS claims for the primary diagnosis of migraine or headache numbered 1,085. As reflected in table 16, in the non-MTF Oklahoma City Community, the areas with the most CHAMPUS claims filed for the primary diagnosis of migraine were the Family Practice, Emergency and Neurology specialties. This was also the case in CHAMPUS claims for the primary diagnosis of headache, as reflected in Table 17.

Table 16

Oklahoma City Community CHAMPUS Claims 346XX by provider specialty, first three quarters FY99

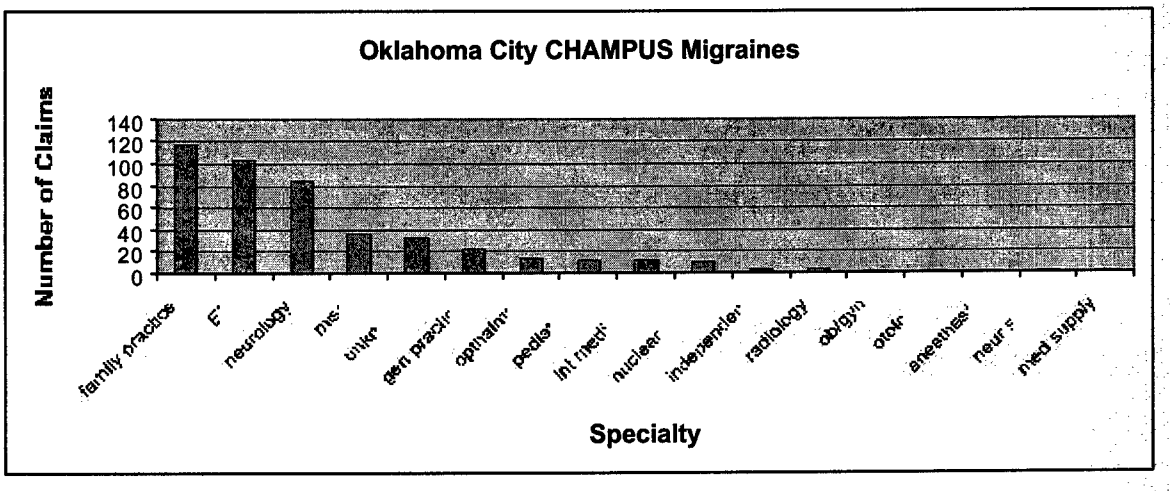
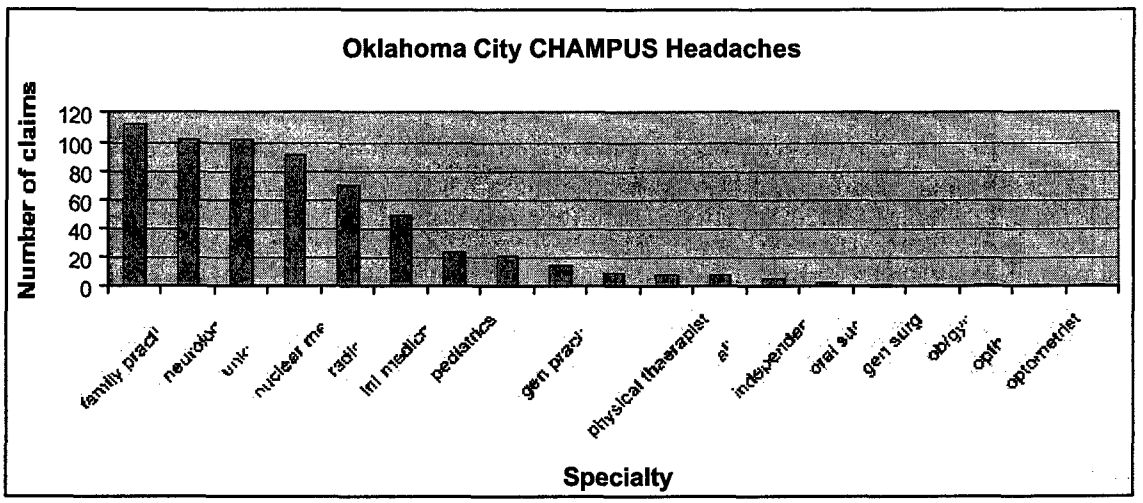


Table 17

Oklahoma City community CHAMPUS claims 7840 by provider specialty, first three quarters FY99



Although encouraging that the Family Practice specialty is seeing many migraine and headache patients in the Oklahoma City CHAMPUS community, it is concerning that an almost equally high number of both migraine and headache sufferers are being seen in the Emergency room. Given that the Oklahoma City MTF does not have an Emergency Room, it may not be surprising that patients with acute headaches and migraines are presenting to civilian Emergency Rooms for care. However, the high Emergency Room numbers may indicate that much of the migraine and headache management in this community is acute care and emergency driven rather than planned and comprehensive. The numbers may indicate that this community requires further provider and patient education on migraine diagnosis, management and appropriate

referrals to specialty or primary care providers.

Table 18

Oklahoma City Community CHAMPUS Claims 7840/346XX paid by Government, first three quarters of FY99

Oklahoma City CHAMPUS	Total claims	%of claims Paid	Government Paid
Migraine non ER	353	76%	$ 25,436.00
Migraine ER	103	86%	$ 14,750.00
Headache non ER	516	76%	$ 70,161.00
Headache ER	113	81%	$ 19,751.00
Total	1085		$ 130,098.00

As seen above in Table 18, the amount the government has paid for headache and migraine claims in the Oklahoma City CHAMPUS community for the first three quarters of FY99 is over $130,000. Many claims have not yet been paid and the fourth quarter is not included. As seen previously in the Killeen community, and below in the Rio Grande Valley Community, the non-ER Headache claims are highest in the Oklahoma City Community as well.

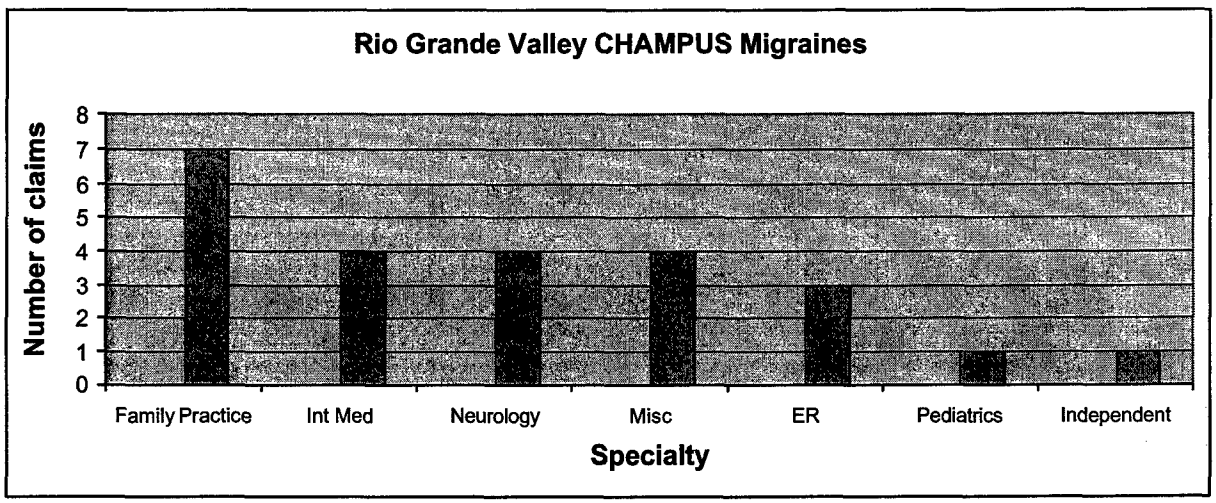
Rio Grande Valley Community

The Rio Grande Valley Community does not include an MTF, therefore the data includes only CHAMPUS data on the number of migraine and headache visit claims for the first three quarters of FY99. According to CEIS data, 98 visits for the primary diagnosis of migraine and headache occurred in the Rio Grande

Valley community in the first three quarters of FY99.

Table 19

Rio Grande Valley Community CHAMPUS claims, 346XX,by provider specialty, first three quarters FY99



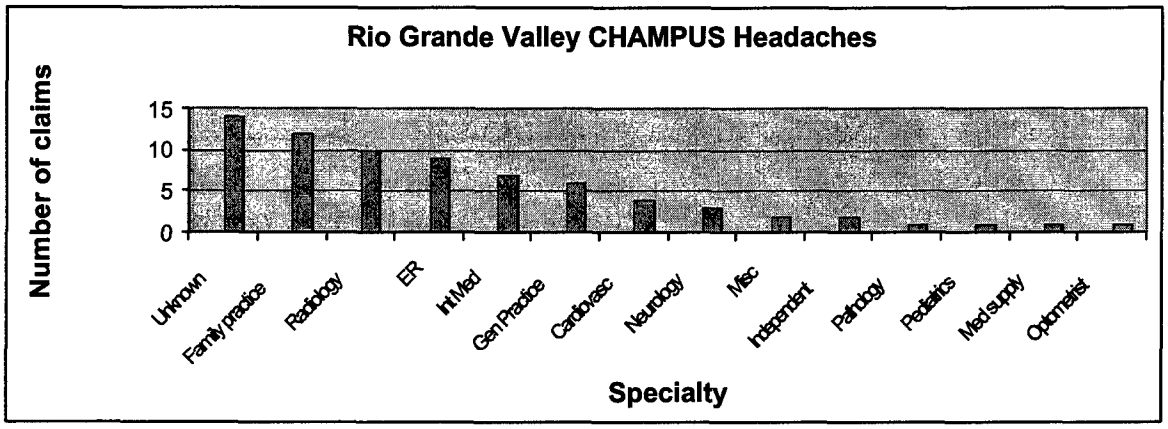
As reflected in Table 19, the specialty to which the most migraine claims were attributed was Family Practice, followed by Internal Medicine and Neurology. This is encouraging in that the majority of migraine sufferers appear to be seen primarily in the primary care or specialty setting and not the Emergency Room.

As reflected in Table 20, data regarding headaches is more difficult to evaluate because the most frequent specialty seeing headache patients is "unknown". Unknown was followed by Family Practice, Radiology and the Emergency Room. Again, it is somewhat encouraging that the Emergency Room is not the top location to which patients present for headache treatment in

this community.

Table 20

Rio Grande Valley Community CHAMPUS claims, 7840 by provider specialty, first three quarters FY99



As seen below in Table 21, the government has paid only about $11,000 for migraine and headache claims for the first three quarters of FY99.

Table 21

Rio Grande Valley Community CHAMPUS claims 346XX and 7840 paid by government, for the first three quarters of FY99,

Rio Grande Valley Community CHAMPUS	Number of claims	%of claims Paid	Government Paid
Migraine non ER	22	64%	$ 783.00
Migraine ER	3	33%	$ 43.00
Headache non ER	64	69%	$ 9,655.00
Headache ER	9	78%	$ 436.00
Total	98		$ 10,917.00

Step 2d

By writing additional Trendstar reports using CHAMPUS data in CEIS one is able to obtain patient level information on the patients presenting for a primary diagnosis of migraine and headache and how often each presented for the first three quarters of FY99. In CEIS, by writing a Trendstar report using ICD-9 and social security number with family member prefix, one can obtain a list of patients that frequently seek care for migraines or headaches. Knowing who these patients are is extremely valuable. One can target the most frequently presenting patients to ensure they receive appropriate case management to decrease the frequency of their visits and increase the effectiveness of each visit.

Summarized in Appendix F, using CEIS MTF and CHAMPUS data, are lists of migraine/headache patients with the number of primary migraine and headache visits/claims per patient in FY99 for each community. The identification numbers are obscured for patient privacy.

Killeen MTF

For DACH, the data showed one migraine sufferer with 39 visits in FY99 for the primary diagnosis of migraine or headache, a second with 34 visits and several with greater than 25 visits. Of the 4,085 patients presenting during FY99 with a primary diagnosis of migraines or headaches at DACH, only 31, or

less than 1%, were seen greater than 15 times in FY99 and only 287, or 7%, were seen 5 times or greater in FY99.

Killeen CHAMPUS

In the Killeen community, outside the MTF, CHAMPUS claims for the first three quarters of FY99 revealed one patient with 32 visits, one with 17 visits, one with 14 visits and four with 12 visits for the primary diagnosis of migraine/headache. Of the 1,021 patients in the Killeen community who filed CHAMPUS visit claims for the primary diagnosis of migraine/headache in the first three quarters of FY99, 81 of them filed 5 or more visit claims.

Oklahoma City MTF

In the Oklahoma City Community at Tinker Air Force Base, of the 661 patients seen for the primary diagnosis of migraine or headache in the MTF, the two most frequent patients had nine visits, eight patients had seven visits and four had six visits. Only 20 patients were seen at least five times in FY99 for the primary diagnosis of migraine and headache in the MTF.

Oklahoma City CHAMPUS

For the first three quarters of FY99, 1,095 outpatient CHAMPUS visit claims were filed for the primary diagnosis of migraine and headache in the Oklahoma City Community. Of the 529 patients seen for the primary diagnosis of migraine and headache, one had 37 visits, another had 33 visits, and another

had 21 visits during the first three quarters of FY99. 53 out of 529 patients were seen five times or more for the primary diagnosis of migraine or headache in that time frame. Even though pharmacy visits may be included in this CHAMPUS claim data, this data may indicate that the migraine and headache sufferers in the civilian care sector are being seen more frequently than those in the MTF. This raises questions that need addressing about this community.

Rio Grande Valley CHAMPUS

In the Rio Grande Valley community, of the 54 migraine and headache sufferers, only four were seen greater than five times for the primary diagnosis of migraine and headache. One was seen seven times, one was seen six times, and two were seen five times during the first three quarters of FY99.

Step 3

Step three is to analyze the demographic, migraine and headache data for each community and consider potential benefits and uses of this information. Included in Step two above were the results of the data collection and discussion/analysis of the data. This section will focus on potential benefits and uses of the information obtained by applying this prototype.

In order to look region-wide at the migraine community and to compare communities, one must have demographic, migraine and

headache data on all 42 communities. By looking at the DEERS demographic data available for each community, Region 6 can determine how many eligible beneficiaries are in each community. The demographic data can also indicate, in those communities with the TRICARE Prime option, what percentages of eligible beneficiaries are enrolled and to whom (MTF or network). Demographic data can indicate the age; sex and beneficiary category break out of the community population.

There are many potential benefits to having this demographic and enrollment information. One can array the communities based on the number of eligible beneficiaries and use this information to concentrate initial efforts on those larger communities. One can assess communities by the number of enrolled beneficiaries versus the number of eligible beneficiaries to focus marketing and enrollment efforts. One can use the age, sex and beneficiary category in each community to assist in population health efforts. For example, one can use these community demographics to determine which sex, beneficiary status and age group to target with wellness and prevention efforts such as women's health, geriatrics, pediatrics, active duty, or retiree groups.

Using community-level disease-specific CEIS data, one can obtain valuable information on where the migraine and headache patients are presenting for care in each community. For each

community, one can obtain information on which clinics (MTF) or provider specialty (civilian sector) sees the majority of migraine patients. One can assess where the majority of patients are being treated and focus patient and provider education in those clinics. One can identify the clinics or specialties that care for few migraine sufferers and encourage them to have the patient seen in more experienced clinics in an effort to improve quality of care.

By using PLCA costs, the cost per migraine visit for each clinic (MTF) can be evaluated and compared. Facilities may use this information to evaluate the most cost effective clinic for migraine management. By assessing the government paid CHAMPUS claim amounts in each community, one can determine approximate non-MTF community expenditures for migraine and headache treatment and diagnostic services. There may be a way to use this information to reduce the costs of migraine and headache management in that community. In a community with an MTF, can frequently presenting migraine patients be seen in an established migraine specialty clinic at the MTF? In non-MTF communities, can the contractor establish, within the network, a preferred provider or location that specializes in managing headaches and migraines? This may lead to decreased utilization and decreased emergency room visits in that community.

After evaluating the community-level disease-specific data,

one might ask the following questions. In these two communities, why are the number of migraine visits to the emergency room high in one and low in the other? What impact might this have on satisfaction with care, quality of care and treatment costs? How often are the migraine patients returning to be seen? What is one community doing that another one is not? Are there equal resources available? What can potentially be done to improve the situation in this community?

One can obtain information on which patients are seen for migraine/headache and those that are seen most frequently. The MTF or network can target the most frequently presenting patients to ensure they receive appropriate management to decrease the frequency of their visits and increase the effectiveness of each visit. This prototype identified which migraine or headache patients were seen most frequently. Region 6 may ask what the network or MTF has done to assure that these frequent patients are seen in the most appropriate care setting and receiving the best care available, keeping an eye on costs. The facility may choose to target those most frequently seen patients for case management efforts.

For example, at Brooke Army Medical Center (BAMC) in 1998, a group of Army-Baylor HCA Graduate Students used CEIS to evaluate the BAMC Emergency Room/ Urgent Care Clinic's most frequently seen patients from June 1997-June 1998. They found

that headache was the Emergency Room's sixth most common presenting diagnosis and were able to obtain data on the most frequently presenting headache patients. The information on frequently seen headache patients led BAMC to attempt to incorporate these patients into the Pain Clinic for proper case management (Baker, Burns, Fisher, Prow and Schneider, 1998).

The most significant potential benefit to having this community level information is to provide insight. Region 6 can use this information to ask questions and to make region wide resource allocation and healthcare delivery decisions. Having the patient seen in the least costly and most experienced clinic the fewest times necessary would appear to be a valuable goal. Clearly, the number and magnitude of the potential uses of the information obtained indicates that this prototype can provide very useful community-level disease-specific data and will be of great value to decision makers.

Step 4

The fourth step was to identify a method to proliferate the information, issues, best practices and improvement opportunities throughout the region. One method was developed using the new Region 6 governance structure. Communication of issues and best practices within the region should follow the new structure. At this time, the new governance structure has

held several internal council meetings, one TSEC in March and has scheduled the first Board of Directors Meeting for May 2000. The first TSEC discussed metrics at length and shared resource sharing and regional logistics successes. Disease-specific community-level data has not been presented through the new governance structure at the time of completion of this GMP; however, the following paragraphs describe how the process should work.

Once an issue or success is identified in a community, the Lead Agent staff should assess the situation and present at the appropriate internal council. If it is a clinical issue, it should be discussed at the Population Health Council. Beneficiary and enrollment issues should be discussed at the Operations Council and business and finance issues should be discussed at the Business Management Council. The issues and potential suggestions will be researched with subject matter expert and community input where possible. A power team of select Lead Agent staff and MTF or Contractor staff may be required to fully develop the issue.

After researching the issue and communicating with appropriate community representatives, issues and suggestions that cannot be handled at the MTF, Network or Lead Agent Level should be brought forward to the Lead Agent Development Council. The Development Council will prioritize the issues and

suggestions and take the information forward to the TSEC.

The TSEC consists of the MTF commanders, FHFS key representatives, TRICARE SW Chief Executive Officer, Executive Director, Chief Medical Officer and Deputy Executive Directors. The TSEC is key to communicating disease-specific information, successes, best practices and improvements.

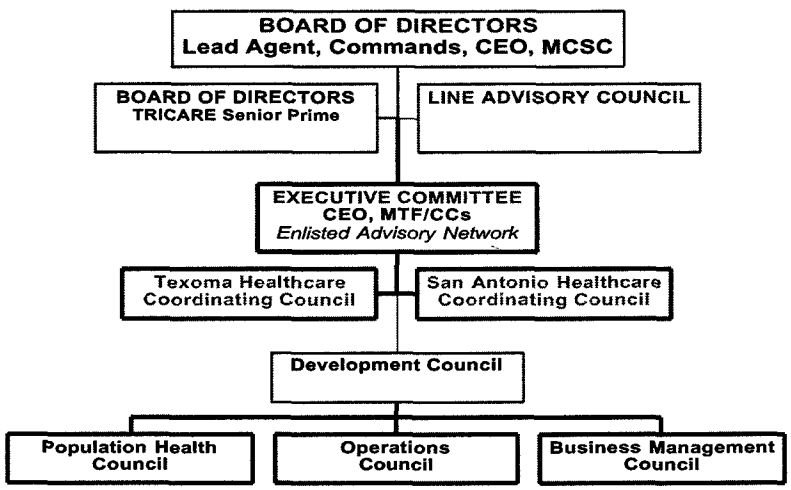


Figure 7: Region 6, TRICARE Southwest Regional Governance Structure as of February 2000.

Next, Lead Agent Staff takes the recommendation of the TSEC to the TRICARE SW Board of Directors, which consists of the Major Commands, Intermediate Commands, Lead Agent Executives and key network or FHFS representatives. It is in this stage that

the decision to allocate resources to an improvement effort will be made.

Ultimately the improvement or adoption of the best practice is implemented by the MTF or network. Following the improvement initiative, community level data should be collected using the same process and then compared to the baseline. Useful information during the evaluation phase may include changes in PLCA and CHAMPUS amounts per community; changes in number of visits, changes in location of visit (clinic or specialty), or changes in the frequency of visits per patient. The community level data obtained during stages one and two of this process can be used as baseline data on that community and will be a valuable tool in the evaluation phase.

Conclusions and Recommendations

The results of this project are assisting Region 6 to answer the question "What is the health of your region?" This GMP developed a regional method the staff can use to obtain and evaluate disease-specific community information and a method to proliferate disease-specific patterns and best practices throughout the region.

This project successfully developed a regional prototype to obtain and evaluate disease-specific, community level information, using CEIS. By following the steps as outlined in

the Methods and Procedures Section, one can divide a region into communities and obtain demographic data through DEERS on those communities. By using CEIS, a standardized information system, one can gather and evaluate disease-specific direct care (MTF) clinic visit and CHAMPUS data on the community. The focus is no longer on the MTFs in the region, but on communities. This community level data can then be assessed across the region. Best practice areas and areas needing improvement will be identified through this proliferation of disease-specific information. These disease-specific best practices and opportunities to improve will be communicated through the Governance structure. With the disease-specific information and community comparisons across the region, one can make intelligent resource allocation and health care decisions.

The following paragraphs are recommendations for our three sample communities based on the results obtained from applying the prototype using the diagnosis of migraine and headache as an example.

Recommendations for Killeen Community:

As indicated in the Results and Discussion section, the two DACH clinics seeing the highest numbers of migraine patients are the Neurology Clinic and the Community Mental Health Clinic, both of which can provide a consistent and comprehensive approach to migraine management. In the Killeen CHAMPUS

community, the CHAMPUS provider specialty seeing the majority of migraine patients is the Neurology specialty. This is a community-wide success story. The following list includes recommendations and questions dealing with the Killeen Community.

(1) Because DACH headache patients are most often seen in the Monroe Family Care Clinic and the Emergency Room, the recommendation is that headache patients be carefully evaluated to rule out migraine. If a migraine diagnosis is made they should be referred to the Neurology Clinic or Community Mental Health Clinic.

(2) A strong recommendation is that the MTF assess the coding practices of the Family Care Clinic and the Emergency Room. Are patients actually presenting with migraines but being coded as presenting with headaches?

(3) It is recommended that the following questions be asked. Are these emergency room visits just occasional acute migraine/headache episodes or is the Emergency Room where those patients receive their ongoing migraine/headache care? Are these patients presenting after hours to the Emergency Room because there is no alternative care location?

(4) It is also recommended that DACH target the two patients seen 39 times and 34 times, as well as the patients seen greater than 25 times in FY99 for the primary diagnosis of

migraine and headache, for case management efforts immediately. The goal would be to decrease utilization and enhance the effectiveness of each visit.

(5) Because CHAMPUS migraine and headache data was more difficult to evaluate due to collection methodologies, the recommendation is that pharmacy claims and diagnostic claims be removed from future data collection efforts.

(6) It is recommended that the following questions be asked. Is the almost $250,000 spent on migraine/headache CHAMPUS claims in the first three quarters of FY99 excessive? Can the MTF recapture any of these visits to decrease the CHAMPUS costs? Can offering diagnostic services at DACH reduce the high cost of non-ER claims? Would it reduce utilization and decrease costs if the network referred chronic migraine and headache sufferers to a specialized migraine treatment center?

(7) In the Killeen CHAMPUS community, they should target the three identified patients with 32, 17 and 14 migraine/headache claims in the first three quarters for immediate case management efforts.

Recommendations for Oklahoma City Community

As discussed in the Results and Discussion section, it is encouraging to note that in the Oklahoma City MTF, migraine and headache sufferers appear to be receiving care in clinics that can provide regular, planned contact with providers, such as the

Internal Medicine Clinic and the Family Practice Clinic. This is a success story. In the Oklahoma City CHAMPUS community, the specialties seeing the most migraine and headache patients are Family Practice, Emergency and Neurology. As discussed in the Results and Discussion section, it is encouraging that the Family Practice specialty is seeing many migraine and headache patients in the Oklahoma City CHAMPUS community.

(1) However, questions regarding coding in the Oklahoma City MTF arose out of this data collection. The number of patient visits coded as headache numbered 839 and migraines numbered 149. The recommendation is that the staff members at the Oklahoma City MTF evaluate these numbers. Are they correct or are presenting patients being coded as a simple headache if they have any kind of headache? The MTF may find that the staff has educational needs in coding or in accurately diagnosing migraines.

(2) It is recommended that the MTF target the two most frequently presenting patients; each had nine visits, for case management efforts.

(3) A high number of both migraine and headache sufferers are being seen in the Oklahoma City CHAMPUS community Emergency Room. The high emergency room numbers may indicate that much of the migraine and headache management in this community is acute care and emergency driven rather than planned and comprehensive.

It is recommended that the community assess whether it requires further provider and patient education on migraine diagnosis, management and appropriate referrals to specialty or primary care providers.

(4) This community should be asked the same questions as the Killeen CHAMPUS community. Are their CHAMPUS, government paid amounts for migraine/headaches excessive? Can the chronic migraine and headache sufferers be brought back into the MTF for care to decrease the CHAMPUS costs? Can offering diagnostic services at the MTF reduce the high cost of non-ER claims? Which diagnostic services does this smaller MTF have available? Would it reduce utilization and decrease costs if the network referred chronic migraine and headache sufferers to a specialized migraine treatment center?

(5) This community should immediately target those three patients that filed 37, 33 and 21 claims for case management efforts.

(6) This community should evaluate why the highest number of times a patient was seen in the MTF for migraine/headache care was nine and in the civilian sector, patients filed 37, 33 and 21 claims for migraine/headache care. Does this indicate that migraine/headache sufferers are seen more frequently for migraine/headache care in the CHAMPUS community? Are the most frequently seen migraine/headache sufferers in the MTF better

managed than those in the civilian sector, or is it simply a data collection methodology issue?

Recommendations for Rio Grande Valley Community.

According to the demographic data obtained regarding this community, about 7,000 eligible beneficiaries reside in this location. Only 98 CHAMPUS claims were filed in the Rio Grande Valley community for migraine/headache in the first three quarters of FY99. This relatively low number of eligible beneficiaries, low number of claims filed and low monetary amount of claims paid for migraines and headaches may indicate that this community not be a primary regional focus at this time. The majority of patients were seen by the Family Practice, Internal Medicine and Neurology specialties. This is a success story, in that patients appear to be presenting to primary care settings and not emergency settings.

(1) Because many claims were coded with provider specialty unknown, it is recommended that CHAMPUS provider and office staff coding education be provided.

(2) Again, the data collection methodology should be altered to remove diagnostic service and pharmacy claims.

(3) The community should target the four patients in the Rio Grande Valley Community, filing greater than five migraine/headache claims, for case management efforts.

Limitations

Potential limitations exist with the implementation of this model regionally, one of which is the amount of time, and therefore costs, that Lead Agent personnel must spend to initiate the prototype. Initially, the time investment required for a small team to identify the communities and the zip codes included in those communities and to enter this data into CEIS is approximately two to three weeks. It takes two days to reformat the Trendstar reports to reflect the new communities and an additional two days to run the disease-specific CEIS reports. The first attempt at analyzing and evaluating disease-specific data may take up to two weeks; however, subsequent data analysis should take no longer than a few days. The time investment to maintain currency on the specific diagnosis is minimal. MTF data should be updated monthly. It takes about 24-36 hours to run refreshed CEIS reports. It should be sufficient to refresh CHAMPUS data once a quarter, because CHAMPUS claims data is slower to arrive.

Information systems containing patient and diagnostic data may be incomplete or include non-current data. Data found in executive decision making systems such as CEIS is only as good as the data input into the systems feeding CEIS. Data-entry quality is very challenging, and must be enforced at the clinic and facility level. For example, as discussed above and seen in

Tables 14 and 20, providers were coded as "unknown" specialty and therefore we were unable to determine accurate specialty numbers.

Another significant concern is the fact that part of the population receives care in MTFs and part of the population receives care in the civilian network. This project retrieved as much information as possible on both direct and non-direct care from the same system (CEIS), but CHAMPUS claim data and direct care (MTF) data are different. Significantly, upon completion of the initial data collection, it was identified that pharmacy claims attributed to the migraine and headache ICD-9 codes might have been included in the data. Therefore the CHAMPUS claims data is likely to be skewed. If one were to add a step to remove pharmacy claims when writing the Trendstar reports, one could remove the pharmacy CHAMPUS claims and assess only visit claims. It might also be beneficial to remove diagnostic CHAMPUS claims such as Radiology and Nuclear Medicine in order to see more clearly which CHAMPUS claims were actually filed for provider visits.

When assessing MTF CEIS information, potential issues exist as well. For example, telephone consults in the MTF may count as clinic visits in the MTF but they would not have been authorized CHAMPUS claims. Cost data collection is also problematic in the MTF. Accounting methodologies in the MTF

differ from the civilian sector. This project used PLCA data in this GMP, but Enrollment Capitation Cost (EBC) data could have been chosen instead.

A valuable tool that was not used in this project was the Health Enrollment Assessment Review (HEAR), a self-reporting tool that categorizes beneficiary response to select questions, some of them concerning chronic headaches, resource use and general health status. According to Lt.Col. Gary Blamire from the Lead Agent Office, the current HEAR completion rate averages only 20% for active duty and 27% for non-active duty with 21% of non-catchment, non-active duty completing the HEAR. Although these are not disappointing completion rates for an optional tool, the information provided gives only a partial picture of the Region 6 population. This tool can be useful in further data collection as a source of self-reported baseline information.

This prototype may not be transferable to other less mature TRICARE regions. Region 6 has a strong partnership with its two network contractors, particularly FHFS. The contract has been in place since 1995 and is relatively stable. Region 6 also has region-wide access to information in our current systems, such as CEIS, and the individual expertise to obtain and analyze this information, making it useful to decision makers.

This project only addressed three sample communities: the

Killeen community which includes DACH, a large MTF; the Oklahoma City community which includes Tinker AFB, with only an ambulatory care clinic; and the Rio Grande Valley community, which has only TRICARE Extra and Standard network options. It is critical that the other 39 communities are addressed and baseline disease-specific data be obtained in order to compare these communities across the region and make best practice and improvement decisions.

Finally, the new Region 6 governance structure is untried. It may prove to be unsuccessful for use in proliferating regional disease-specific information. The governance structure may prove to be ineffective at influencing the patient care and healthcare delivery decisions made at the community and regional level. Region 6 should assess alternative methods to communicate best practices and improvement opportunities throughout the region. One source is the Region 6 website, www.tricaresw.af.mil/.

As the Region 6 Lead Agent Office's focus evolves to include evaluating the health of the region, developing a method of obtaining and evaluating regional disease-specific information has become increasingly important. The Lead Agent expects that this model of obtaining, evaluating and proliferating disease-specific community information region-wide will become very useful to the region. A few of the more significant benefits

are summarized next.

Dividing the region into 42 non-MTF based communities is very important to looking at our entire eligible beneficiary population. The community demographic information is extremely useful to understanding the population of the community and can be used effectively to better define communities. The disease-specific information obtained at the patient and community level can be used in any number of ways to improve patient care to include improving continuity and ensuring the most appropriate level and location of care. The information on the costs of care delivery, in conjunction with clinical information, can be used to make appropriate fiscal decisions at community and regional levels. Resources can be allocated based on this information as deemed appropriate by the Board of Directors. Other communities within Region 6 may adopt best practices that are communicated regionally. This prototype will go a long way toward assisting the Lead Agent to meet its goals to optimize regional health status, member focused services and fiscal performance.

Suggestions for Future Research

The first essential item that must be accomplished is to apply this prototype to the other 39 communities in Region 6. It is extremely important to obtain a complete regional picture of the disease-specific community information to facilitate

regional decision-making.

Although this methodology provides some information on costs, further research needs to be done on the costs associated with a particular disease. In the migraine example, pharmaceutical information must be evaluated. Useful pharmaceutical information may include number of prescriptions filled for certain migraine specific pharmaceuticals and matching patients with drugs prescribed and frequency of refills. One should evaluate the costs of each commonly used migraine abortive agent and prophylactic agent and assess the research available on the effectiveness of each drug to determine the drugs most clinically effective and cost effective to prescribe. Other costs that should be evaluated in the case of regional migraine management are the costs of non-pharmaceutical treatments and the costs of lost productivity.

In order for this prototype to be used as a regional tool to obtain, evaluate and proliferate disease-specific information, one must evaluate the usefulness of this migraine example in impacting regional migraine management. After implementation of this prototype across the region and proliferation of issues and best practices, one should evaluate pros and cons of the time spent by the Lead Agent staff and the benefit of the proliferation regionally.

Using ICD-9 codes to obtain outpatient visit data was very

effective. Common Procedural Task (CPT) codes can also be used to obtain procedure-specific data and Diagnostic Related Groups (DRGs) can be used to obtain inpatient diagnosis-specific data. The next diseases to which this regional model should be applied are those with the key characteristics of high cost acute events, high variation in treatment, high disease prevalence and impact on quality of life. Diseases such as diabetes and asthma have these characteristics and are excellent choices for the application of this prototype.

Clearly, the development of a prototype of a regional method to obtain and evaluate disease-specific patient and community information offers exciting possibilities. Transferring the method to other diseases in Region 6 and proliferating the information across the region is a great step forward toward optimizing the health of the region. The evaluation and regional proliferation of community and disease-specific information could greatly affect the patient care and healthcare delivery decisions made at the community and regional level. Future steps should include the transference of this model to other health care regions. This project will be an important step in the Lead Agent's attempt to answer the question asked by the TRICARE Management Activity, "What is the health of your region?"

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TRENDSTAR REPORT SPECIFICATION WORKSHEET

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Qualification				

TABLES AND OTHER FILE FORMATS USED IN REPORT GENERATION			
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Summary Table		**LOS Calculation**	ARITHMATIC / GEOMETRIC
Benchmark Table		**Other**	

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Sort Key					

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TRENDSTAR REPORT SPECIFICATION WORKSHEET

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BUSINESS QUESTION/SCENARIO: _____

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DARNALL FY99 0110

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Qualification											
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TRENDSTAR Report Specification Worksheet (Con't)

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Element				
Qualification				

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Category				
Element				
Qualification				

TABLES AND OTHER FILE FORMATS USED IN REPORT GENERATION			
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Summary Table		**LOS Calculation**	ARITHMATIC / GEOMETRIC
Benchmark Table		**Other**	

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Sort Key					

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Page one – Flexible Report Editor / Page Two – Flexible Report Writer

RPC: HAWKINS.RPC
REPORT TITLE: MIGRAINE PATIENTS FY99
BUSINESS QUESTION/SCENARIO: _____

DATABASES
DARNALL FY99 0110

ROWS		
	CATEGORY	**ELEMENT**
Row Sort 1	PATIENT DATA	MEDICAL REC NUMBER
Row Sort 2		
Row Sort 3		
Row Sort 4		
Row Sort 5		

	COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5	COLUMN 6	COLUMN 7
Column Type	Data						
Column Category	Utilization						
Column Element	Cases						
Column Database	N/A						
Column Qualifiers							
Category							
Element							
Qualification							
Column Name	TOTAL VISITS						

TRENDSTAR Report Specification Worksheet (Con't)

MBE TABLE(S) USED WITH DATABASES	
MBE Table(s)	JH_MIGRAINE.MBE

REPORT QUALIFIERS				
	1	**2**	**3**	**4**
Category				
Element				
Qualification				

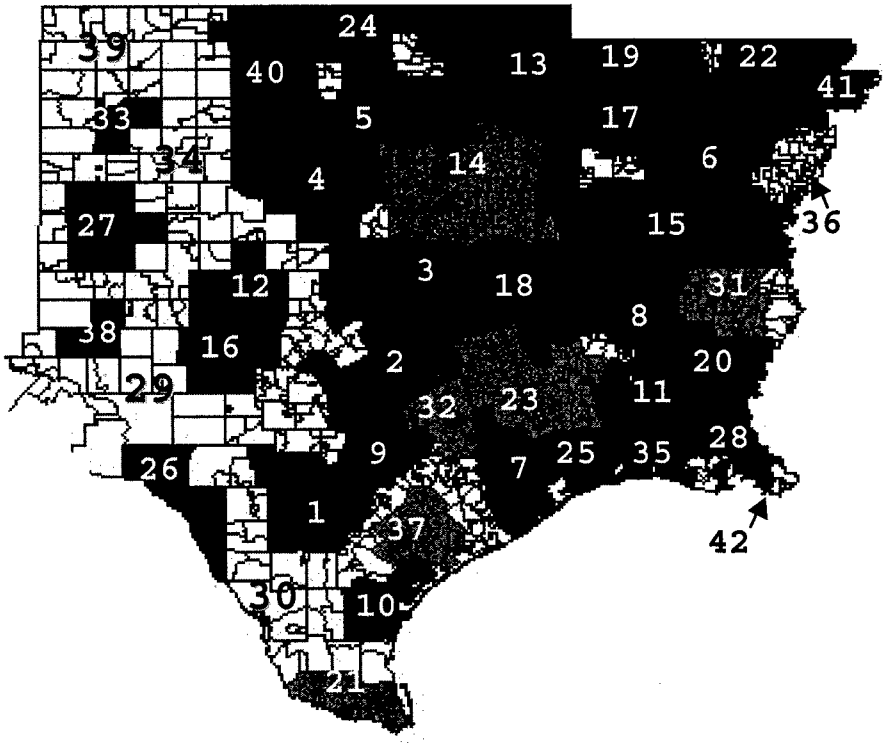
	5	**6**	**7**	**8**
Category				
Element				
Qualification				

TABLES AND OTHER FILE FORMATS USED IN REPORT GENERATION			
Procedure Name Table		**Comparable LOS Table**	
Summary Table		**LOS Calculation**	ARITHMATIC / GEOMETRIC
Benchmark Table		**Other**	

COMMONLY USED FORMAT OPTIONS					
RANK		**ERS NAME**	**PRN NAME (Text File)**	**First month of report Output**	**OTHER**
Column #	1	HAWKINS3.ERS	HAWKINS3.PRN		
Order	~~ASC~~ / DESC				
Sort Key					

PRINT OPTIONS	
LOG FILE	HAWKINS3.LOG

Community Map

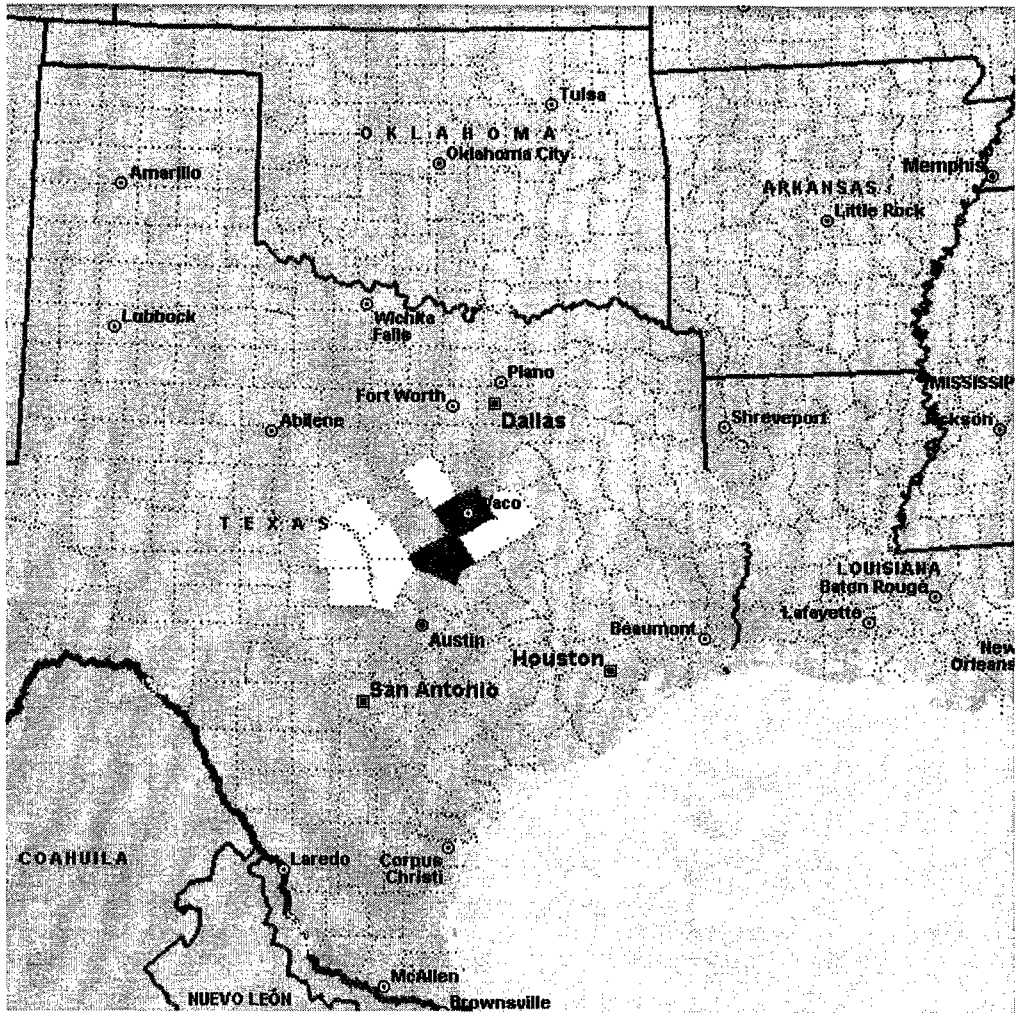


- TRICARE Prime - MTF
- TRICARE Prime – Network
- TRICARE Extra
- TRICARE Standard

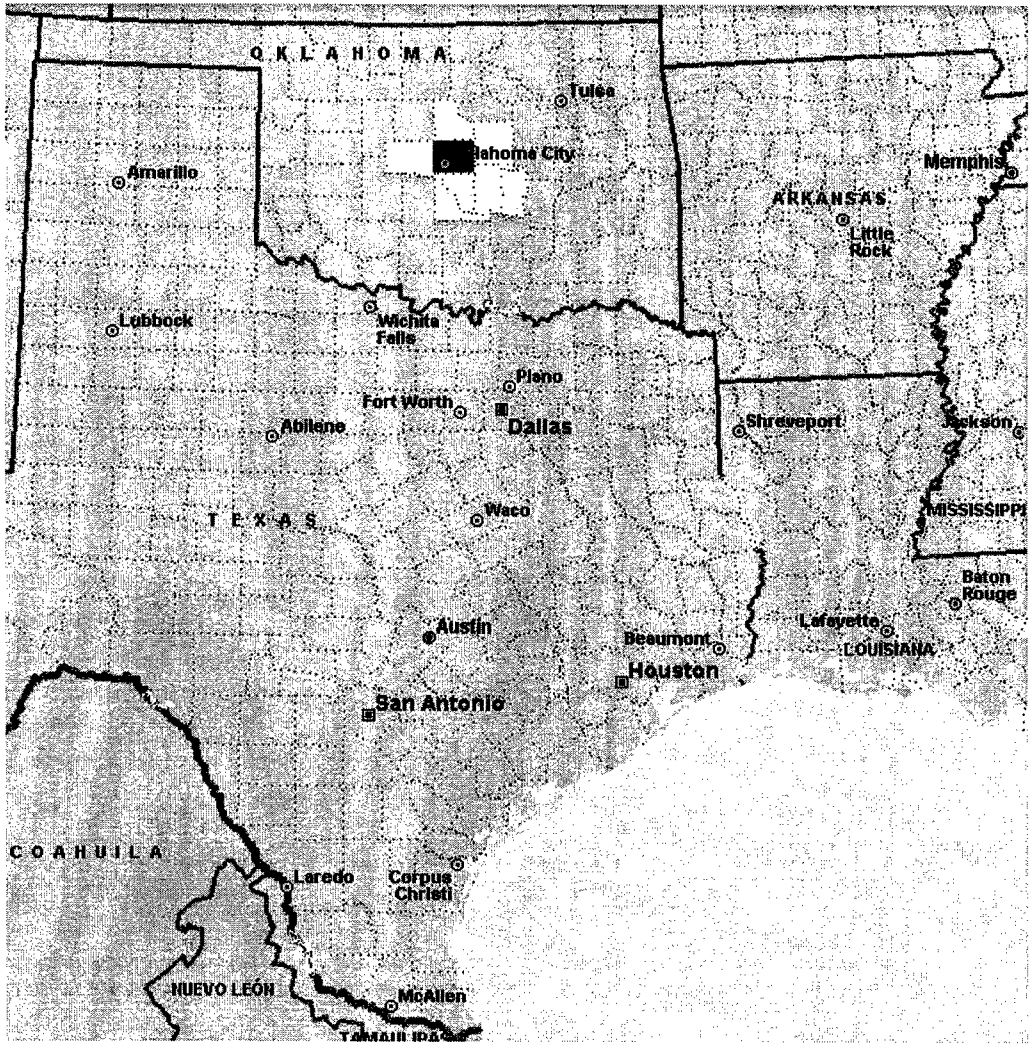
- San Antonio
- Killeen
- Dallas
- Texoma
- Oklahoma City
- Little Rock
- Houston
- Shreveport
- Austin
- Corpus Christi
- Vernon
- Abilene
- Tulsa
- Grayson
- Texarkana
- San Angelo
- Fort Smith
- Gregg
- Fayetteville
- Rapides
- Rio Grande Valley

- **Jonesboro**
- **Angelina**
- **Garfield**
- **Beaumont**
- **Del Rio**
- **Lubbock**
- **Lafayette**
- Central Texas Outlying
- South Texas Outlying
- **Monroe**
- **Brazos**
- **Amarillo**
- North Texas Outlying
- **Lake Charles**
- Arkansas Outlying
- **Victoria**
- **Midland**
- Oklahoma Outlying
- **NW Oklahoma Prime Non-Catchment**
- **Blytheville**
- Louisiana Outlying

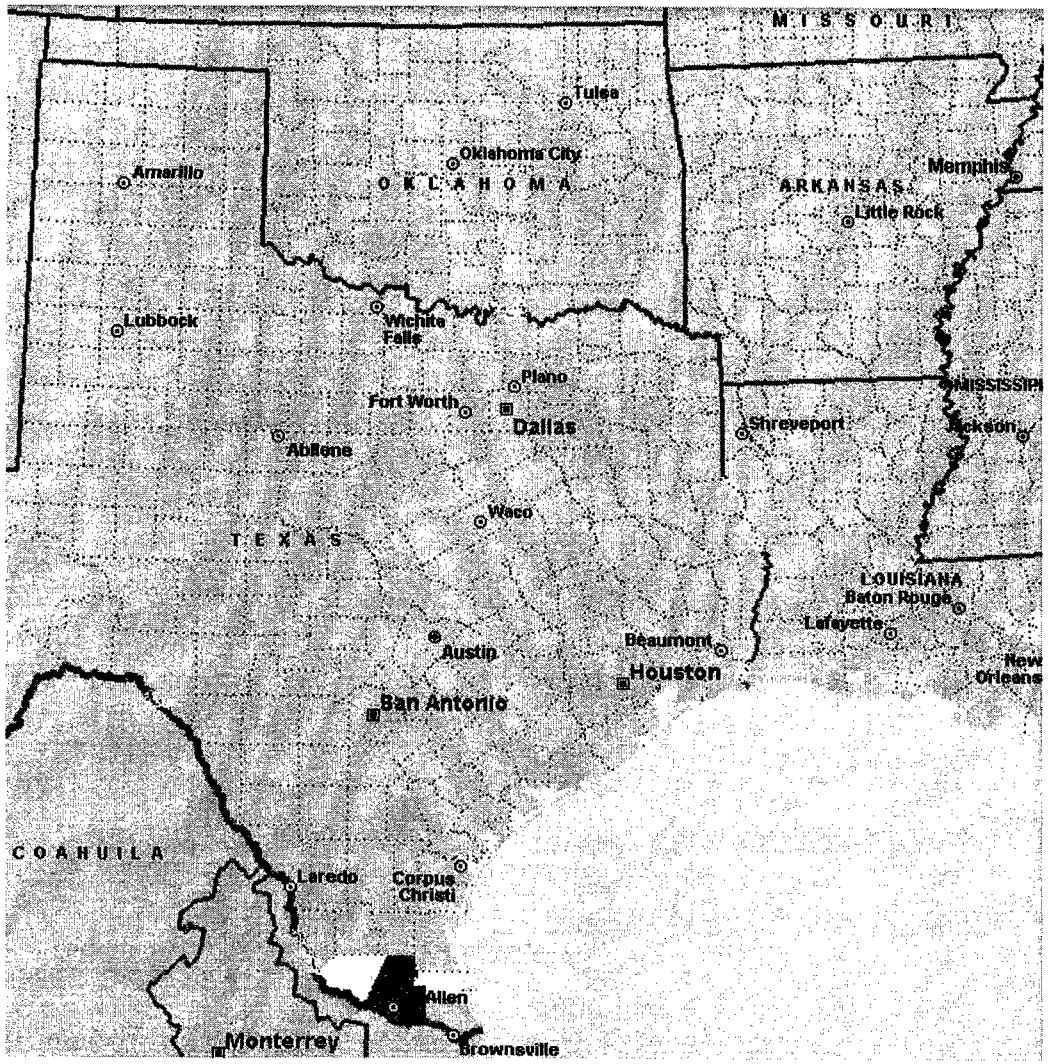
Killeen


Tulsa
OKLAHOMA
Oklahoma City
Amarillo
Memphis
ARKANSAS
Little Rock
Lubbock
Wichita Falls
Plano
Fort Worth
Dallas
Abilene
Shreveport
Waco
TEXAS
LOUISIANA
Baton Rouge
Lafayette
Austin
Beaumont
Houston
San Antonio
COAHUILA
Laredo
Corpus Christi
McAllen
NUEVO LEON
Brownsville

Oklahoma City



Rio Grande Valley



KILLEEN Community

MTF = Darnell ACH Ft Hood, TX DMIS ID = 0110

KILLEEN	TX ZIP	CITY	STATE	COUNTY	AREA
	76714	Waco	TX	Mc Lennan	254
	76715	Waco	TX	Mc Lennan	254
	76712	Woodway	TX	Mc Lennan	254
	76710	Waco	TX	Mc Lennan	254
	76711	Waco	TX	Mc Lennan	254
	76633	China Spring	TX	Mc Lennan	254
	76664	Mart	TX	Mc Lennan	254
	76702	Waco	TX	Mc Lennan	254
	76795	Waco	TX	Mc Lennan	254
	76657	Mc Gregor	TX	Mc Lennan	254
	76716	Waco	TX	Mc Lennan	254
	76708	Waco	TX	Mc Lennan	254
	76704	Waco	TX	Mc Lennan	254
	76654	Leroy	TX	Mc Lennan	254
	76706	Waco	TX	Mc Lennan	254
	76705	Waco	TX	Mc Lennan	254
	76630	Bruceville	TX	Mc Lennan	254
	76557	Moody	TX	Mc Lennan	254
	76655	Lorena	TX	Mc Lennan	254
	76707	Waco	TX	Mc Lennan	254
	76703	Waco	TX	Mc Lennan	254
	76643	Hewitt	TX	Mc Lennan	254
	76624	Axtell	TX	Mc Lennan	254
	76797	Waco	TX	Mc Lennan	254
	76638	Crawford	TX	Mc Lennan	254
	76682	Riesel	TX	Mc Lennan	254
	76524	Eddy	TX	Mc Lennan	254
	76640	Elm Mott	TX	Mc Lennan	254
	76684	Ross	TX	Mc Lennan	254
	76691	West	TX	Mc Lennan	254
	76701	Waco	TX	Mc Lennan	254
	76799	Waco	TX	Mc Lennan	254
	76798	Waco	TX	Mc Lennan	254
	76648	Hubbard	TX	Hill	254
	76628	Brandon	TX	Hill	254
	76673	Mount Calm	TX	Hill	254
	76650	Irene	TX	Hill	254
	76660	Malone	TX	Hill	254
	76666	Mertens	TX	Hill	254
	76636	Covington	TX	Hill	254
	76676	Penelope	TX	Hill	254
	76645	Hillsboro	TX	Hill	254
	76692	Whitney	TX	Hill	254
	76622	Aquilla	TX	Hill	254
	76055	Itasca	TX	Hill	254
	76631	Bynum	TX	Hill	254
	76627	Blum	TX	Hill	254

76621	Abbott	TX	Hill	254
76853	Lometa	TX	Lampasas	512
76539	Kempner	TX	Lampasas	512
76550	Lampasas	TX	Lampasas	512
76824	Bend	TX	Lampasas	915
76687	Thornton	TX	Limestone	254
76678	Prairie Hill	TX	Limestone	254
76635	Coolridge	TX	Limestone	254
76642	Groesbeck	TX	Limestone	254
76653	Kosse	TX	Limestone	254
76667	Mexia	TX	Limestone	254
76686	Tehuacana	TX	Limestone	254
76880	Star	TX	Mills	915
76844	Goldthwaite	TX	Mills	915
76864	Mullin	TX	Mills	915
76870	Priddy	TX	Mills	915
76534	Holland	TX	Bell	254
76533	Heidenheimer	TX	Bell	254
76513	Belton	TX	Bell	254
76542	Killeen	TX	Bell	254
76541	Killeen	TX	Bell	254
76540	Killeen	TX	Bell	254
76511	Bartlett	TX	Bell	254
76503	Temple	TX	Bell	254
76502	Temple	TX	Bell	254
76501	Temple	TX	Bell	254
76508	Temple	TX	Bell	254
76505	Temple	TX	Bell	254
76504	Temple	TX	Bell	254
76564	Pendleton	TX	Bell	254
76559	Nolanville	TX	Bell	254
76554	Little River	TX	Bell	254
76579	Troy	TX	Bell	254
76571	Salado	TX	Bell	254
76569	Rogers	TX	Bell	254
76549	Killeen	TX	Bell	254
76545	Killeen	TX	Bell	254
76544	Killeen	TX	Bell	254
76543	Killeen	TX	Bell	254
76548	Harker Height	TX	Bell	254
76547	Killeen	TX	Bell	254
76546	Killeen	TX	Bell	254
76665	Meridian	TX	Bosque	254
76652	Kopperl	TX	Bosque	254
76671	Morgan	TX	Bosque	254
76690	Walnut Spring	TX	Bosque	254
76689	Valley Mills	TX	Bosque	254
76637	Cranfills Gap	TX	Bosque	254
76634	Clifton	TX	Bosque	254
76649	Iredell	TX	Bosque	254
76644	Laguna Park	TX	Bosque	254
78657	Marble Falls	TX	Burnet	830

78654	Marble Falls	TX	Burnet	830
78611	Burnet	TX	Burnet	512
78605	Bertram	TX	Burnet	512
78608	Briggs	TX	Burnet	512
76552	Leon Junction	TX	Coryell	254
76538	Jonesboro	TX	Coryell	254
76526	Flat	TX	Coryell	254
76528	Gatesville	TX	Coryell	254
76566	Purmela	TX	Coryell	254
76525	Evant	TX	Coryell	254
76561	Oglesby	TX	Coryell	254
76558	Mound	TX	Coryell	254
76596	Gatesville	TX	Coryell	254
76599	Gatesville	TX	Coryell	254
76522	Copperas Cov	TX	Coryell	254
76597	Gatesville	TX	Coryell	254
76598	Gatesville	TX	Coryell	254
76661	Marlin	TX	Falls	254
76570	Rosebud	TX	Falls	254
76632	Chilton	TX	Falls	254
76656	Lott	TX	Falls	254
76685	Satin	TX	Falls	254
76677	Perry	TX	Falls	254
76680	Reagan	TX	Falls	254
76675	Otto	TX	Falls	254

OKLAHOMA CITY Community

MTF = 72nd Med Group, Tinker AFB, OK DMIS ID = 0096

OKLAHOMA CITY **OK**

ZIP	CITY AND STA	COUNTY	AREA
73044	Guthrie, OK	Logan	405
73050	Langston, OK	Logan	405
73027	Coyle, OK	Logan	405
73028	Crescent, OK	Logan	405
73063	Mulhall, OK	Logan	405
73073	Orlando, OK	Logan	580
73056	Marshall, OK	Logan	580
73058	Meridian, OK	Logan	405
74079	Stroud, OK	Lincoln	918
74881	Wellston, OK	Lincoln	405
74834	Chandler, OK	Lincoln	405
74864	Prague, OK	Lincoln	405
74832	Carney, OK	Lincoln	405
74855	Meeker, OK	Lincoln	405
74824	Agra, OK	Lincoln	918
74026	Davenport, OK	Lincoln	918
74869	Sparks, OK	Lincoln	405
74875	Tryon, OK	Lincoln	918
73085	Yukon, OK	Canadian	405
73078	Piedmont, OK	Canadian	405
73099	Yukon, OK	Canadian	405
73090	Union City, OK	Canadian	405
73022	Concho, OK	Canadian	405
73014	Calumet, OK	Canadian	405
73064	Mustang, OK	Canadian	405
73036	El Reno, OK	Canadian	405
73097	Wheatland, OK	Oklahoma	405
73083	Edmond, OK	Oklahoma	405
73084	Spencer, OK	Oklahoma	405
73101	Oklahoma City	Oklahoma	405
73102	Oklahoma City	Oklahoma	405
73054	Luther, OK	Oklahoma	405
73049	Jones, OK	Oklahoma	405
73151	Oklahoma City	Oklahoma	405
73150	Oklahoma City	Oklahoma	405
73152	Oklahoma City	Oklahoma	405
73153	Oklahoma City	Oklahoma	405
73124	Oklahoma City	Oklahoma	405
73066	Nicoma Park, (	Oklahoma	405
73147	Oklahoma City	Oklahoma	405
73148	Oklahoma City	Oklahoma	405
73125	Oklahoma City	Oklahoma	405
73149	Oklahoma City	Oklahoma	405
73123	Oklahoma City	Oklahoma	405
73117	Oklahoma City	Oklahoma	405

73118	Oklahoma City	Oklahoma	405
73116	Oklahoma City	Oklahoma	405
73115	Oklahoma City	Oklahoma	405
73155	Oklahoma City	Oklahoma	405
73121	Oklahoma City	Oklahoma	405
73122	Oklahoma City	Oklahoma	405
73154	Oklahoma City	Oklahoma	405
73119	Oklahoma City	Oklahoma	405
73120	Oklahoma City	Oklahoma	405
73134	Oklahoma City	Oklahoma	405
73132	Oklahoma City	Oklahoma	405
73135	Oklahoma City	Oklahoma	405
73128	Oklahoma City	Oklahoma	405
73136	Oklahoma City	Oklahoma	405
73130	Oklahoma City	Oklahoma	405
73131	Oklahoma City	Oklahoma	405
73034	Edmond, OK	Oklahoma	405
73020	Choctaw, OK	Oklahoma	405
73129	Oklahoma City	Oklahoma	405
73137	Oklahoma City	Oklahoma	405
73144	Oklahoma City	Oklahoma	405
73143	Oklahoma City	Oklahoma	405
73013	Edmond, OK	Oklahoma	405
73146	Oklahoma City	Oklahoma	405
73145	Oklahoma City	Oklahoma	405
73140	Oklahoma City	Oklahoma	405
73127	Oklahoma City	Oklahoma	405
73141	Oklahoma City	Oklahoma	405
73126	Oklahoma City	Oklahoma	405
73142	Oklahoma City	Oklahoma	405
73106	Oklahoma City	Oklahoma	405
73107	Oklahoma City	Oklahoma	405
73105	Oklahoma City	Oklahoma	405
73103	Oklahoma City	Oklahoma	405
73104	Oklahoma City	Oklahoma	405
73185	Oklahoma City	Oklahoma	405
73184	Oklahoma City	Oklahoma	405
73110	Oklahoma City	Oklahoma	405
73109	Oklahoma City	Oklahoma	405
73003	Edmond, OK	Oklahoma	405
73108	Oklahoma City	Oklahoma	405
73189	Oklahoma City	Oklahoma	405
73045	Harrah, OK	Oklahoma	405
73199	Oklahoma City	Oklahoma	405
74857	Newalla, OK	Oklahoma	405
73008	Bethany, OK	Oklahoma	405
73007	Arcadia, OK	Oklahoma	405
73198	Oklahoma City	Oklahoma	405
73193	Oklahoma City	Oklahoma	405
73190	Oklahoma City	Oklahoma	405

73194	Oklahoma City	Oklahoma	405
73197	Oklahoma City	Oklahoma	405
73196	Oklahoma City	Oklahoma	405
73180	Oklahoma City	Oklahoma	405
73114	Oklahoma City	Oklahoma	405
73167	Oklahoma City	Oklahoma	405
73169	Oklahoma City	Oklahoma	405
73113	Oklahoma City	Oklahoma	405
73172	Oklahoma City	Oklahoma	405
73164	Oklahoma City	Oklahoma	405
73157	Oklahoma City	Oklahoma	405
73156	Oklahoma City	Oklahoma	405
73159	Oklahoma City	Oklahoma	405
73163	Oklahoma City	Oklahoma	405
73162	Oklahoma City	Oklahoma	405
73111	Oklahoma City	Oklahoma	405
73112	Oklahoma City	Oklahoma	405
73177	Oklahoma City	Oklahoma	405
73179	Oklahoma City	Oklahoma	405
73178	Oklahoma City	Oklahoma	405
73160	Oklahoma City	Cleveland	405
73139	Oklahoma City	Cleveland	405
73072	Norman, OK	Cleveland	405
73173	Oklahoma City	Cleveland	405
73170	Oklahoma City	Cleveland	405
73165	Oklahoma City	Cleveland	405
73071	Norman, OK	Cleveland	405
73051	Lexington, OK	Cleveland	405
73026	Norman, OK	Cleveland	405
73019	Norman, OK	Cleveland	405
73070	Norman, OK	Cleveland	405
73069	Norman, OK	Cleveland	405
73068	Noble, OK	Cleveland	405
73031	Dibble, OK	Mc Clain	405
73095	Wayne, OK	Mc Clain	405
74831	Byars, OK	Mc Clain	405
73065	Newcastle, OK	Mc Clain	405
73080	Purcell, OK	Mc Clain	405
73010	Blanchard, OK	Mc Clain	405
73093	Washington, O	Mc Clain	405
74826	Asher, OK	Pottawator	405
74840	Earlsboro, OK	Pottawator	405
74804	Shawnee, OK	Pottawator	405
74852	Macomb, OK	Pottawator	405
74873	Tecumseh, OK	Pottawator	405
74866	Saint Louis, O	Pottawator	405
74851	Mcloud, OK	Pottawator	405
74878	Wanette, OK	Pottawator	405
74802	Shawnee, OK	Pottawator	405
74801	Shawnee, OK	Pottawator	405

74854	Maud, OK	Pottawator	405
74867	Sasakwa, OK	Seminole	405
74868	Seminole, OK	Seminole	405
74884	Wewoka, OK	Seminole	405
74849	Konawa, OK	Seminole	580
74818	Seminole, OK	Seminole	405
74830	Bowlegs, OK	Seminole	405
74837	Cromwell, OK	Seminole	405

Appendix D **Killeen area Demographics**

	Enrolled				Eligible			
Age	Active Du	ADFMLY	RTFMLY	TOTAL	Active Du	ADFMLY	RTFMLY	TOTAL
Age 0-4	0	10,177	242	10,419	0	13,055	551	13,606
Age 05-1	0	12,961	1,819	14,780	0	17,992	4,629	22,621
Age 15-2	13,484	7,181	2,658	23,323	17,018	11,247	10,818	39,083
Age 25-3	12,648	7,139	209	19,996	16,847	10,865	3,300	31,012
Age 35-4	5,064	3,386	2,545	10,995	6,737	4,939	6,729	18,405
Age 45-5	615	580	3,464	4,659	804	977	10,743	12,524
Age 55-6	14	44	2,781	2,839	16	204	9,210	9,430
Age 65-7	0	1	39	40	0	100	6,821	6,921
Age 75-8	0	0	9	9	0	45	3,026	3,071
Over 85	0	0	2	2	0	3	371	374
TOTAL	**31,825**	**41,469**	**13,768**	**87,062**	**41,422**	**59,427**	**56,198**	**157,047**

	DEERS Monthly Enrollment Status						
	Female			Male			Total
Age	Active	N-AD	Total	Active	N-AD	Total	
Age 0-4	0	5,101	5,101	0	5,318	5,318	10,419
Age 05-1	0	7,269	7,269	0	7,511	7,511	14,780
Age 15-2	2,132	6,836	8,968	11,352	3,003	14,355	23,323
Age 25-3	1,874	6,959	8,833	10,774	389	11,163	19,996
Age 35-4	739	4,606	5,345	4,325	1,325	5,650	10,995
Age 45-5	82	2,355	2,437	533	1,689	2,222	4,659
Age 55-6	1	1,640	1,641	13	1,185	1,198	2,839
Age 65-7	0	36	36	0	4	4	40
Age 75-8	0	6	6	0	3	3	9
Over 85	0	0	0	0	2	2	2
TOTAL	**4,828**	**34,808**	**39,636**	**26,997**	**20,429**	**47,426**	**87,062**

ENROLLMENT PCM

	Others	Direct Care	Network	Total
Active Du	0	31,777	48	31,825
ADFMLY	0	33,730	7,700	41,430
RTFMLY	0	8,672	5,080	13,752
TSP	0	3	0	3
TOTAL	**0**	**74,182**	**12,828**	**87,010**

Oklahoma City Demographics

	Enrolled				Eligible			
Age	Active Du	ADFMLY	RTFMLY	TOTAL	Active Du	ADFMLY	RTFMLY	TOTAL
Age 0-4	0	1,935	131	2,066	0	2,440	389	2,829
Age 05-1	0	3,278	841	4,119	0	4,391	2,556	6,947
Age 15-2	1,800	1,689	1,317	4,806	2,320	2,572	6,179	11,071
Age 25-3	2,519	1,650	132	4,301	3,249	2,653	2,402	8,304
Age 35-4	1,608	1,074	1,238	3,920	2,022	1,518	3,714	7,254
Age 45-5	260	205	1,702	2,167	232	298	6,956	7,486
Age 55-6	15	27	1,447	1,489	5	94	7,337	7,436
Age 65-7	0	1	7	8	0	49	6,739	6,788
Age 75-8	0	1	8	9	0	42	3,329	3,371
Over 85	0	1	3	4	0	13	437	450
TOTAL	**6,202**	**9,861**	**6,826**	**22,889**	**7,828**	**14,070**	**40,038**	**61,936**

	DEERS Monthly Enrollment Status						
	Female			Male			Total
Age	Active	N-AD	Total	Active	N-AD	Total	
Age 0-4	0	992	992	0	1,074	1,074	2,066
Age 05-1	0	2,006	2,006	0	2,113	2,113	4,119
Age 15-2	401	1,797	2,198	1,399	1,209	2,608	4,806
Age 25-3	360	1,658	2,018	2,159	124	2,283	4,301
Age 35-4	184	1,706	1,890	1,424	606	2,030	3,920
Age 45-5	34	1,010	1,044	226	897	1,123	2,167
Age 55-6	1	791	792	14	683	697	1,489
Age 65-7	0	6	6	0	2	2	8
Age 75-8	0	7	7	0	2	2	9
Over 85	0	2	2	0	2	2	4
TOTAL	**980**	**9,975**	**10,955**	**5,222**	**6,712**	**11,934**	**22,889**

ENROLLMENT PCM

	Others	Direct Care	Network	Total
Active Du	0	6,194	2	6,196
ADFMLY	0	7,622	2,224	9,846
RTFMLY	0	4,559	2,259	6,818
TSP	0	1	0	1
TOTAL	**0**	**18,376**	**4,485**	**22,861**

Rio Grande Valley Demographics

	Enrolled				Eligible			
Age	Active Du	ADFMLY	RTFMLY	TOTAL	Active Du	ADFMLY	RTFMLY	TOTAL
Age 0-4	0	13	1	14	0	225	59	284
Age 05-1	0	50	16	66	0	280	398	678
Age 15-2	54	25	33	112	175	215	645	1,035
Age 25-3	90	24	2	116	194	134	99	427
Age 35-4	36	11	24	71	38	48	430	516
Age 45-5	14	4	42	60	9	21	921	951
Age 55-6	1	1	107	109	2	15	1,209	1,226
Age 65-7	0	0	2	2	0	8	1,203	1,211
Age 75-8	0	0	2	2	0	2	687	689
Over 85	0	0	0	0	0	1	96	97
TOTAL	**195**	**128**	**229**	**552**	**1,161**	**1,725**	**3,270**	**7,114**

	DEERS Monthly Enrollment Status						
	Female			Male			Total
Age	Active	N-AD	Total	Active	N-AD	Total	
Age 0-4	0	7	7	0	7	7	14
Age 05-1	0	34	34	0	32	32	66
Age 15-2	8	31	39	46	27	73	112
Age 25-3	9	25	34	81	1	82	116
Age 35-4	0	24	24	36	11	47	71
Age 45-5	0	27	27	14	19	33	60
Age 55-6	0	64	64	1	44	45	109
Age 65-7	0	0	0	0	2	2	2
Age 75-8	0	1	1	0	1	1	2
Over 85	0	0	0			0	0
TOTAL	**17**	**213**	**230**	**178**	**144**	**322**	**552**

ENROLLMENT PCM

	Others	Direct Care	Network	Total
Active Du	0	38	157	195
ADFMLY	0	90	32	122
RTFMLY	0	195	28	223
TSP	0	3	0	3
TOTAL	**0**	**326**	**217**	**543**

OK City Community		**CHAMPUS First Three Quarters FY99**	
Migraines		**Headache**	
family practice	118	ER	113
ER	103	family practice	102
neurology	84	neurology	102
misc	36	unknown	92
unknown	33	nuclear med	71
gen practice	23	radiology	49
opthalmol	13	int medicine	24
pediatrics	12	pediatrics	21
int medicine	11	misc	15
nuclear med	10	gen practice	9
independent	4	otology	8
radiology	3	physical thaerapis	8
ob/gyn	2	allergy	6
otology	1	independent	3
anesthesia	1	oral surg	2
neur surg	1	gen surg	1
med supply	1	ob/gyn	1
		opthalm	1
		optometrist	1
Non ER	353		
ER	103		
Total	**456**	Non ER	516
		ER	113
Oklahoma City CHAMPUS		Total	**629**

Migraine non ER
86 out of 353 not paid
$25,436

Migraine ER
14 out of 103 not paid
$14,750

Headache non ER
123 out of 516 not paid
$70,161

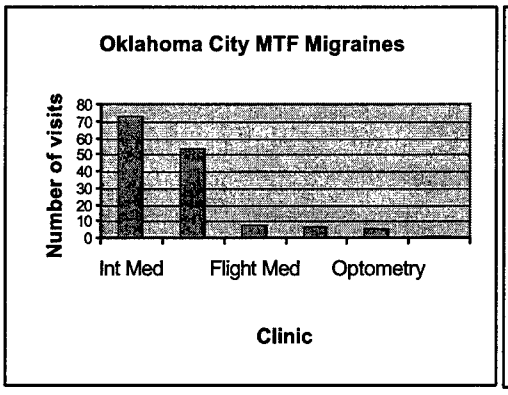
Headache ER
21 out of 113 not paid
$19,751

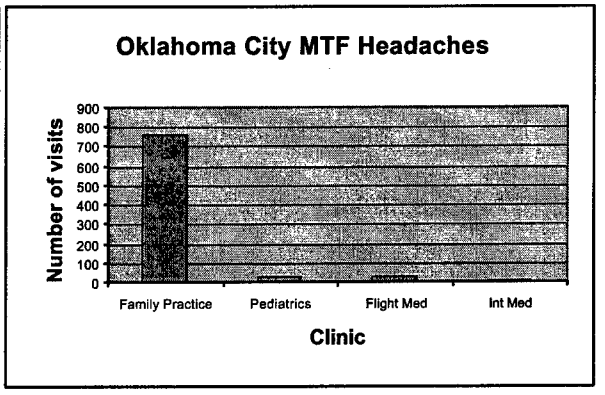
OKLAHOMA City MTF Migraines

BAAA	Int Med	73
BGAA	Family Practice	54
BJAA	Flight Med	8
BDAA	Pediatrics	7
BHCA	Optometry	6
BCBR	Gyn	1
		149

OKLAHOMA City MTF Headaches

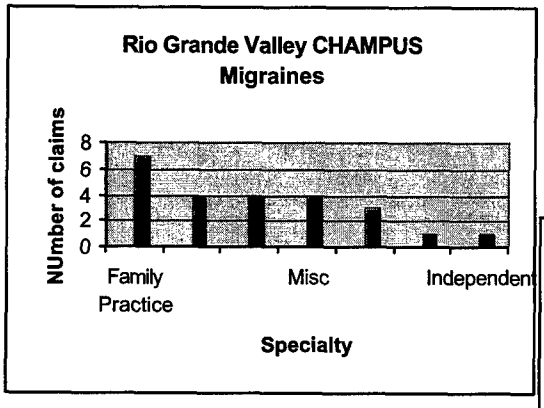
BGAA	Family Practice	764
BDAA	Pediatrics	33
BJAA	Flight Med	30
BAAA	Int Med	12
		839





Rio Grande Valley CHAMPUS Migraines

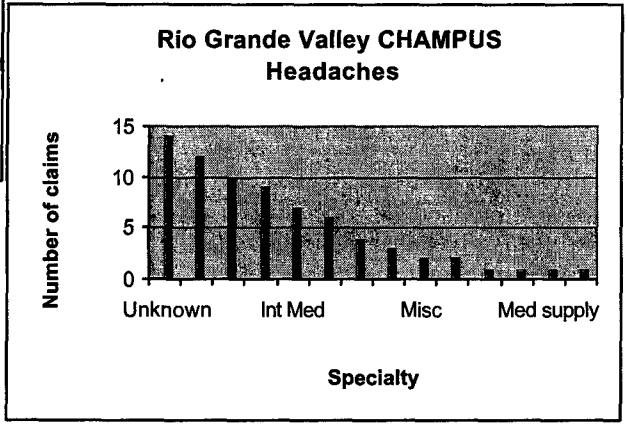
Family Practice	7
Int Med	4
Neurology	4
Misc	4
ER	3
Pediatrics	1
Independent	1
	24



An additional 3 claims are unaccounted for in specialty data, but are included in the patient data.

Rio Grande Valley CHAMPUS Headaches

Unknown	14
Family practice	12
Radiology	10
ER	9
Int Med	7
Gen Practice	6
Cardiovasc	4
Neurology	3
Misc	2
Independent	2
Pathology	1
Pediatrics	1
Med supply	1
Optometrist	1
	73



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FAX: (210) 221-8264

email: kay.livingston@amedd.army.mil

To: MR. LAWRENCE DOWNING **FAX:** 703-767-9244

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REPORT DOCUMENTATION PAGE

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The TRICARE lead Agent Office, Department of Defense, Health Services Region 6. A Graduate Management Project Submitted to the Faculty of the U.S. Army-Baylor University for Successful Completion of Requirements for the Master of Healthcare Administration Degree.

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TRICARE Southwest, DoD Health Service Region 6
7800 IH-10 West, Suite 400
San Antonio, Texas 78230-4750

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US Army Medical Department Center and School
Bldg 2841, MCCS-HRA (US Army-Baylor Program in HCA)
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14. ABSTRACT
This GMP developed a regional method that the TRICARE Southwest staff can use to obtain and evaluate community-level disease-specific data on eligible beneficiaries using TRICARE in both military and civilian settings. The first step taken to accomplish this GMP included dividing the region into manageable data collection areas or communities, geographically determined by eligible beneficairy concentration. The second identified information systems through which one can gather community-level and disease-specific data. Through DEERS, one can obtain demographic data for all Region 6 communities. Disease-specific MTF and CHAMPUS data were collected through CEIS in three sample communities, using the ICD-9 codes for one sample disease/illness. The third step determined potential community and regional benefits to obtaining, evaluating and proliferating this data.This GMP resulted in the identification of recommendations for the three sample communities, to include targeting the frequently presenting patients for case management efforts, improving coding accuracy, encouraging comprehensive, planned care rather than emergency driven care and assessing CHAMPUS disease-specific costs in the community. Thisf GMP also identified a method to proliferate community-level, disease-specific issues, variations and best practices region-wide.

15. SUBJECT TERMS
TRICARE Regional Management, Disease-Specific Data Collection, Population Health, Communities

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